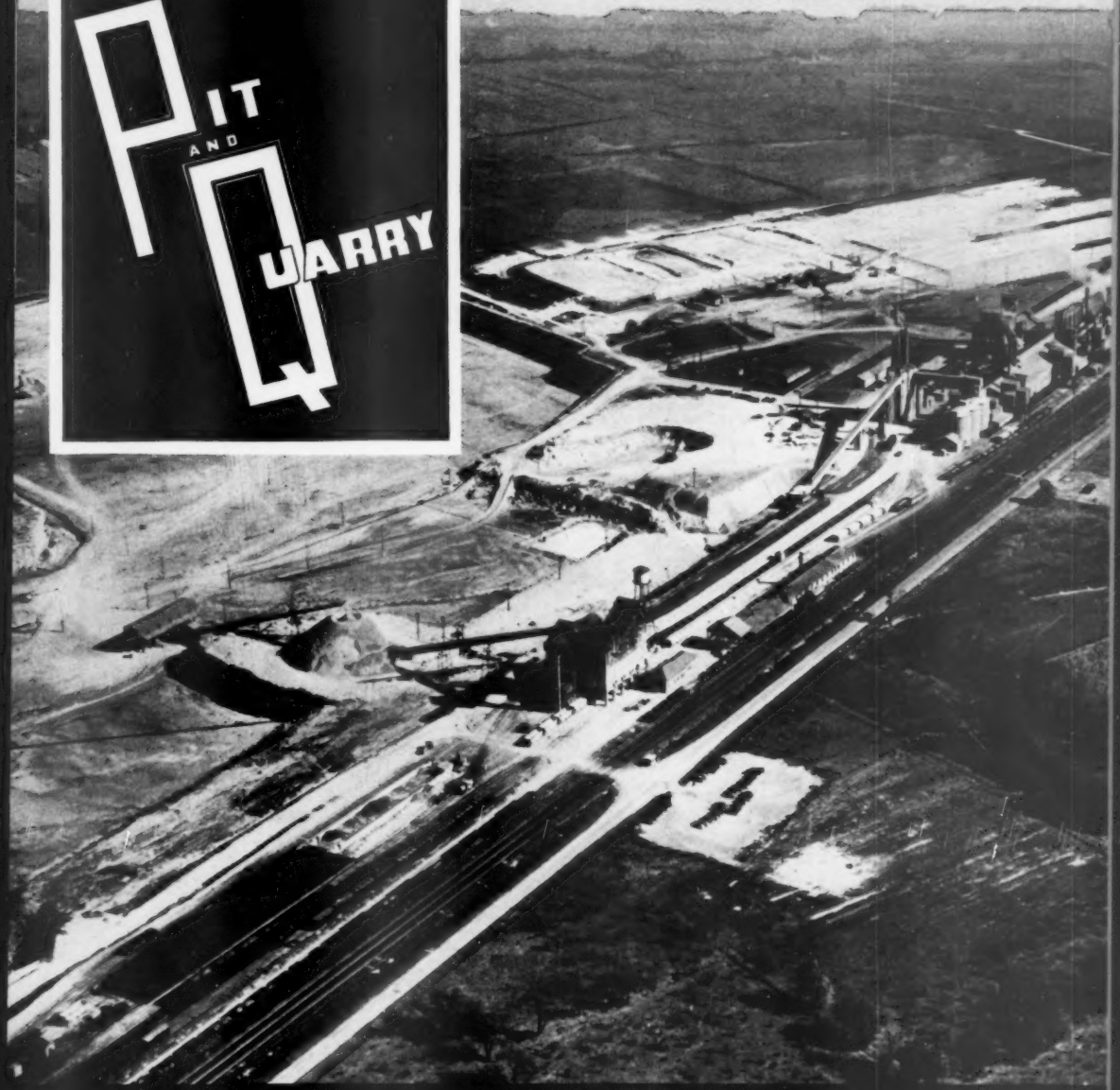
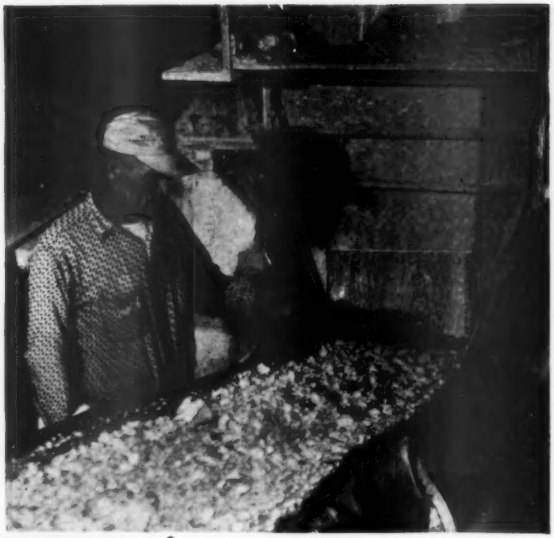
PIT AND QUARRY

NOVEMBER 1949



Dual Impact Action does it again!

And again! And again!



In Ohio limestone...

Tom Hudson, owner Hudson Stone Products Company, Lynchburg, Ohio, says, "A one-crusher plant can be successfully built around this crusher . . . (a New Holland Model 3030)." Important: Breaking force evenly distributed assures accurate sizing without irregular shapes.

....In Florida coral

"We are handling a very abrasive coral rock . . . breaking it down to minus one inch," reports G. D. Monroe, president of the Miami Crushed Stone Company. Note: Tough to handle. Yet a single New Holland 3030 Double Impeller Breaker is *doing the work of three previous crushers.*

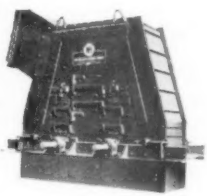
.....In Washington basalt

"They are feeding quarry run rock 12—14 inches," says Alex Ainlay speaking of the Inland Asphalt Co., Spokane, Wash. "The material is basalt (very hard and abrasive). They produce ¾, ½, and ¼" material with a Model 3030 (80% is ¾" minus) at the rate of 100 yds. per hour."

Right—for every rock

Owners everywhere are chalking up records with New Holland Double Impeller Breakers, (four different models) . . . turning out top tonnage in coral, limestone, gravel, all types of rock . . . making top profits.

New Holland Double Impeller Breakers are built to take it—and break it—day in—day out. Heavy duty steel wear plates. All parts accessible. All adjustments easily made. Mounted on I-beams to simplify installation. Minimum power required . . . maximum output assured.



SEE FOR YOURSELF. Pick your spot—and take a look. But first—write for information including distributor. Address Department P-119.

NEW HOLLAND DOUBLE IMPELLER BREAKERS

NEW HOLLAND MANUFACTURING COMPANY, MOUNTVILLE, PA.

Affiliate of The Sperry Corp.

Tackle the toughest jobs with EMERALD CORD AIR HOSE

GOODYEAR INDUSTRIAL RUBBER PRODUCTS

GTM-Specified

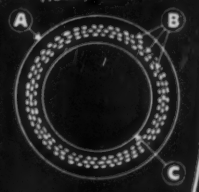
EMERALD CORD AIR HOSE FOR HEAVY-DUTY MINING AND CONSTRUCTION DUTY

A Super-tough, non-gouging green cover; highly resistant to sun, weather and aging.

B Special carcass high-strength cabled yarn, impregnated with "Adhezo" for greater adhesion and more strength.

C Non-porous, seamless oil-resistant synthetic tube will not swell or flake off.

3-Braid Heavy-Duty Type



IF you use air—whether for small tools or for the most severe mine, quarry and construction service—your best buy is EMERALD CORD Air Hose. It's the "head of the family" among Goodyear's job-proved air hoses.

It's the toughest air hose ever built—because its rugged rayon reinforcement cords are especially impregnated with Goodyear's exclusive "Adhezo" bonding which provides extra strength with less wall bulk. That means EMERALD CORD Air Hose is much lighter, with thinner wall gauge, but with far more ruggedness, flexibility and longer life than any previous air carrier of equal inside diameters.

Ask the G.T.M.—Goodyear Technical Man—about EMERALD CORD Air Hose — moderately priced because its extra quality comes from superior engineering, not from excess "beef." Made in light-, medium-, and heavy-duty types. Or write Goodyear, Akron 16, Ohio.

FOR HOSE, FLAT BELTS, V-BELTS, MOLDED GOODS, PACKING, TANK LINING built to the world's highest standard of quality, phone your nearest Goodyear Industrial Rubber Products Distributor.

Emerald Cord—T. M. The Goodyear Tire & Rubber Company

GOODYEAR

THE GREATEST NAME IN RUBBER

PIT AND QUARRY, November, 1949, Vol. 42, No. 5. Published monthly by the Complete Service Publishing Company, 538 South Clark Street, Chicago 5, Ill. Subscription price $3 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $3 additional for each year. Single copy 25 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

GOING OVER WITHOUT A BANG!

Using an oscillograph to measure the accuracy and precision of timing of AMERICAN *Split-Second Electric Blasting Caps.*

AMERICAN CYANAMID COMPANY

EXPLOSIVES

For better breakage with minimum vibration...

AMERICAN Split-Second Electric Blasting Caps

With a *c-cruump* instead of a *bang*, AMERICAN Split-Second Electric Blasting Caps give a close sequence of explosions in one general blast—resulting in better fragmentation with minimized vibrations.

These Split-Second Electric Blasting Caps were developed and perfected by AMERICAN research. They are produced with great technical skill by the most modern manufacturing methods... and are available to meet your specific blasting needs. Their use helps you obtain increased tonnage of properly sized material... placed where you want it... with maximum speed and economy.

Remember, *whatever* your requirement, there is an AMERICAN Explosive to meet it.

Capable Field Engineers Are Available At Your Call

★ HIGH EXPLOSIVES ★ PERMISSIBLES ★ BLASTING POWDER ★ BLASTING ACCESSORIES

AMERICAN Cyanamid COMPANY

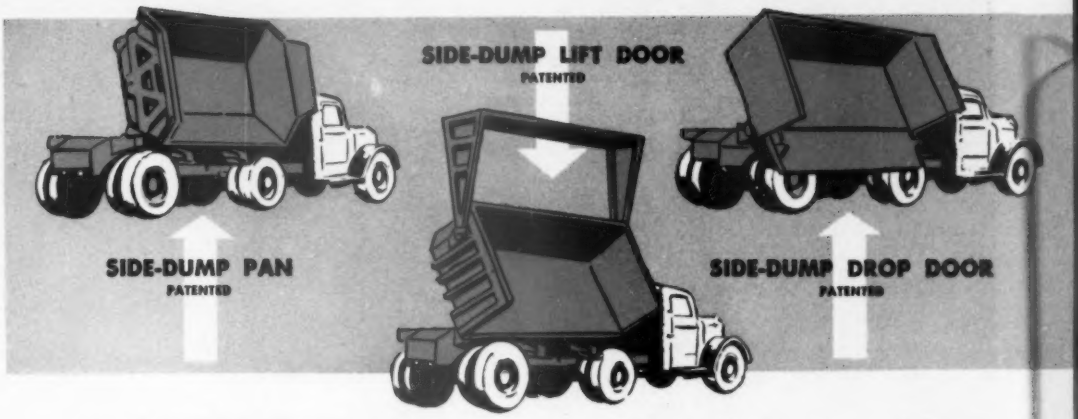
EXPLOSIVES DEPARTMENT

30 ROCKEFELLER PLAZA • NEW YORK 20, N. Y.

SALES OFFICES: PITTSBURGH, PA. • BLUEFIELD, W. VA. • SCRANTON, PA. • CHICAGO, ILL. • POTTSVILLE, PA. • MAYNARD, MASS.

GO EASY ON COSTS!

GO *SIDE-DUMP* WITH EASTON



SIDE-DUMP trailers, truck bodies, tandems for low-cost hauling of earth, rock and ore

- There's a *right* EASTON Side-Dump truck body, trailer or tandem to meet every requirement in heavy-duty off-highway service.
- Choose either hydraulic dumping, or dumping by EASTON automatic overhead hoist.
- Choose *any make* of truck tractor. EASTON Side-Dumps serve with all makes.
- EASTON Engineering Counsel assists in selecting the *right* type of side-dump, of the *right* capacity for your job. Write for complete information:
  Easton Car & Construction Company of Easton, Pa.

BUILT BY THE MAKERS OF
EASTON MINE AND QUARRY CARS

EASTON
Side-Dump
TRAILERS • TRUCK BODIES

B-1035

JR ROEBLING

TURN TO PERFORMANCE THAT

PAYS OFF

Preformed
"Blue Center"
Wire Rope

PROVEN ECONOMY IN QUARRIES

YOU SAVE TWO WAYS with Roebling Preformed "Blue Center" Wire Rope. *First*, you save because "Blue Center" Steel—an exclusive Roebling development—gives rope extra toughness, extra stamina to resist shock, and longer service life.

Second, you save because Roebling Preforming provides a rope that's easier to handle and install . . . that performs better on the job. It practically abolishes vibration and whipping . . . improves winding . . . is much less inclined to develop sets and kinks.

Roebling wire rope is one of the most widely used products in industry today. Whatever your requirements, there's a type and size for real efficiency and minimum expense.

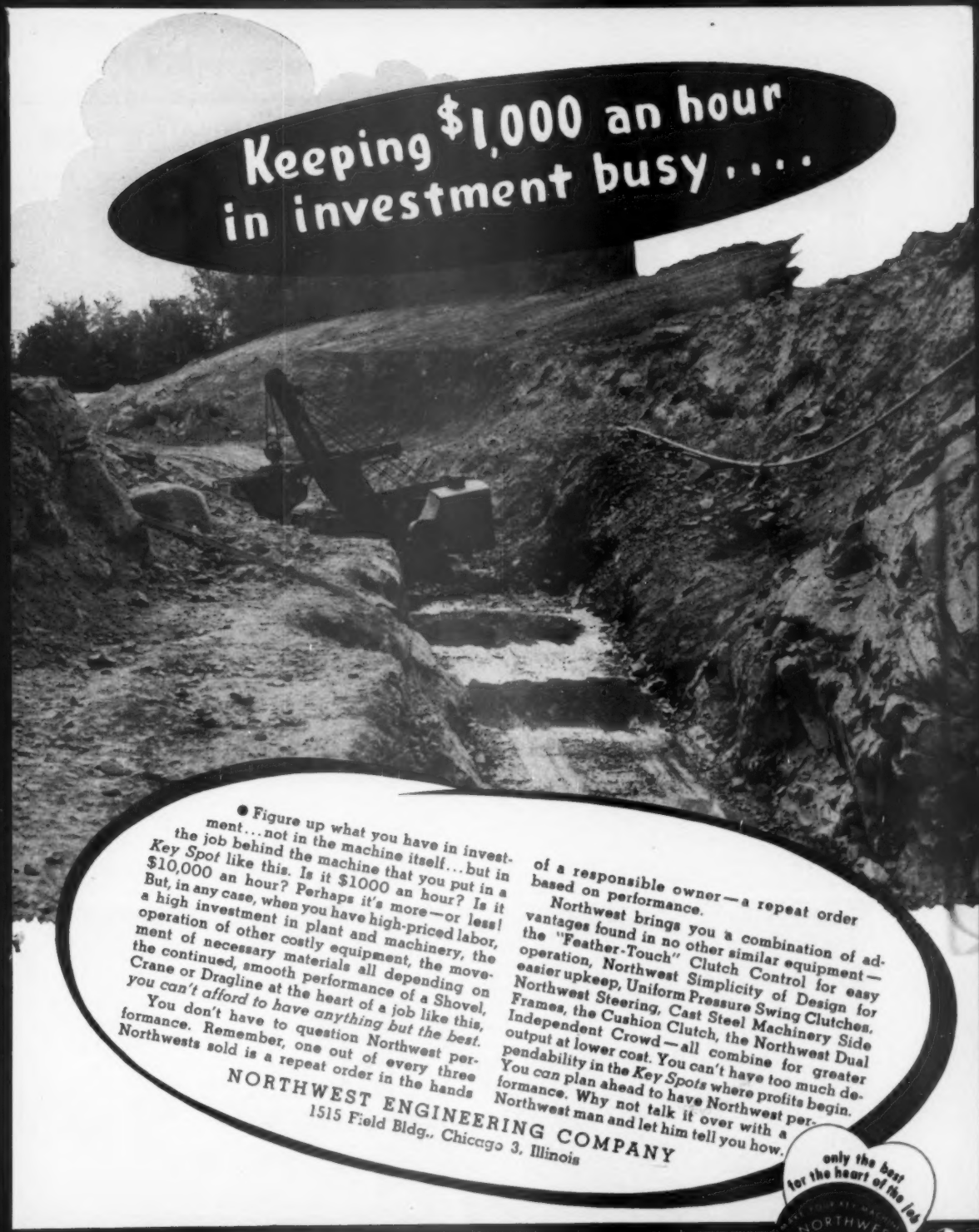
Have your Roebling Field Man suggest the *right* rope for most economical service. John A. Roebling's Sons Company, Trenton 2, New Jersey.

WRITE OR CALL THE ROEBLING FIELD MAN AT YOUR NEAREST ROEBLING OFFICE AND WAREHOUSE

Atlanta, 934 Avon Ave. ★ ***Boston,*** 51 Sleeper St. ★ ***Chicago,*** 5525 W. Roosevelt Rd. ★ ***Cleveland,*** 701 St. Clair Ave., N. E. ★ ***Denver,*** 1635 17th St. ★ ***Houston,*** 6216 Navigation Blvd. ★ ***Los Angeles,*** 216 S. Alameda St. ★ ***New York,*** 19 Rector St. ★ ***Philadelphia,*** 12 S. 12th St. ★ ***Pittsburgh,*** 855 W. North Ave. ★ ***Portland, Ore.,*** 1032 N. W. 14th Ave. ★ ***San Francisco,*** 1740 17th St. ★ ***Seattle,*** 900 First Ave.

ROEBLING

☆ A CENTURY OF CONFIDENCE ☆



● Figure up what you have in investment... not in the machine itself... but in the job behind the machine that you put in a *Key Spot* like this. Is it $1000 an hour? Is it $10,000 an hour? Perhaps it's more—or less! But, in any case, when you have high-priced labor, a high investment in plant and machinery, the operation of other costly equipment, the movement of necessary materials all depending on the continued, smooth performance of a Shovel, Crane or Dragline at the heart of a job like this, *you can't afford to have anything but the best.*

You don't have to question Northwest performance. Remember, one out of every three Northwests sold is a repeat order in the hands of a responsible owner—a repeat order based on performance.

Northwest brings you a combination of advantages found in no other similar equipment—the "Feather-Touch" Clutch Control for easy operation, Northwest Simplicity of Design for easier upkeep, Uniform Pressure Swing Clutches, Northwest Steering, Cast Steel Machinery Side Frames, the Cushion Clutch, the Northwest Dual Independent Crowd—all combine for greater output at lower cost. You can't have too much dependability in the *Key Spots* where profits begin. You *can* plan ahead to have Northwest performance. Why not talk it over with a Northwest man and let him tell you how.

NORTHWEST ENGINEERING COMPANY
1515 Field Bldg., Chicago 3, Illinois

only the best for the heart of the job

A NORTHWEST CRAWLER CRANE

PROFIT

NORTHWEST

Convertible for any Mining Material Handling or Excavation Problem

THIS HEAVY-DUTY OIL HELPS YOU CUT

DELVAC OILS

PROVED performance under toughest conditions!

APPROVED by 28 crane, shovel and dragline makers—10 tractor and 45 bus-truck builders!

●Delvac "900 Series" Oils are specially designed to keep your truck, tractor and other automotive-Diesel and carburetor-type engines on the job, working full time.

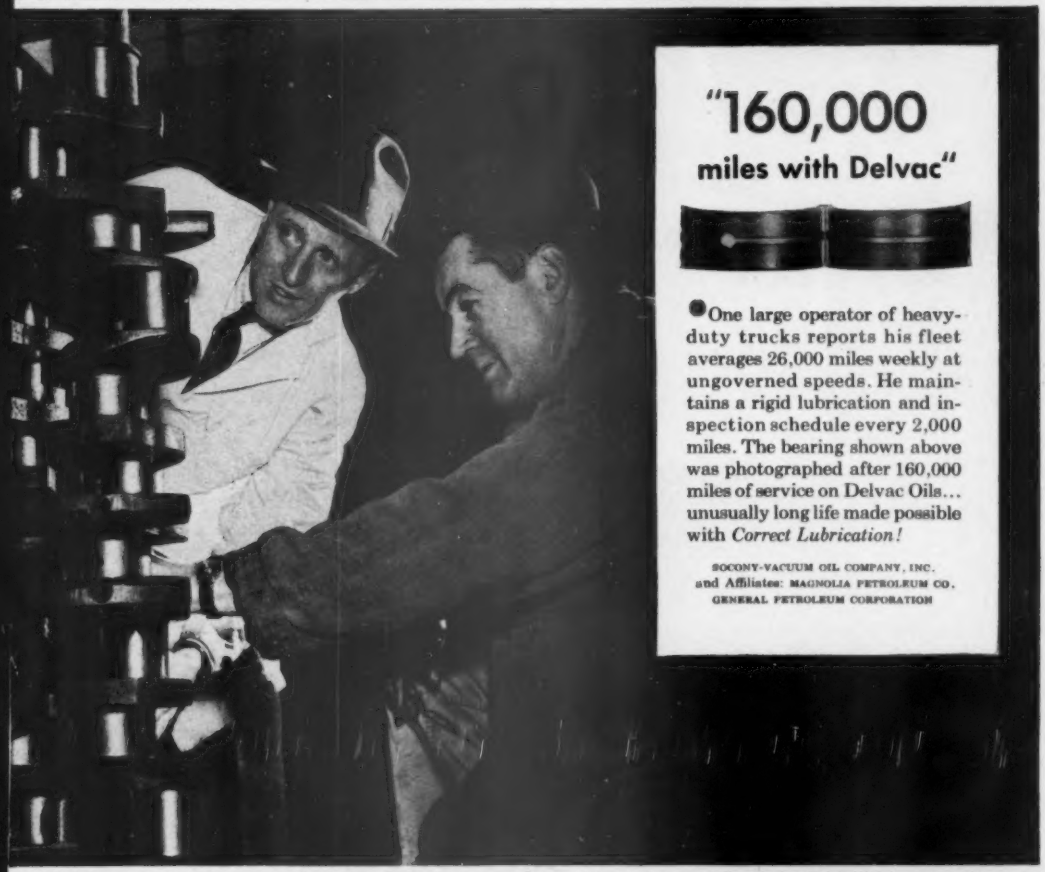
They're famous *heavy-duty* oils—give full engine protection throughout the entire operating temperature range...possess rich lubrication films that provide full piston ring seal, minimize blowby, reduce friction.

Delvac "900 Series" Oils combine exceptional oxidation resistance with special detergent properties to help keep engines clean. Contaminants remain in suspension, are easily removed by periodic crankcase draining. High resistance to chemical change protects hard alloy bearings against corrosion.

* * *

Get *correct lubrication!* Use Delvac Oils!

DOWN-TIME . . . BEAT CONTRACT DEADLINES!



"160,000 miles with Delvac"

●One large operator of heavy-duty trucks reports his fleet averages 26,000 miles weekly at ungoverned speeds. He maintains a rigid lubrication and inspection schedule every 2,000 miles. The bearing shown above was photographed after 160,000 miles of service on Delvac Oils... unusually long life made possible with *Correct Lubrication!*

SOCONY-VACUUM OIL COMPANY, INC.
and Affiliates: MAGNOLIA PETROLEUM CO.
GENERAL PETROLEUM CORPORATION

SOCONY-VACUUM

Contractors' Service

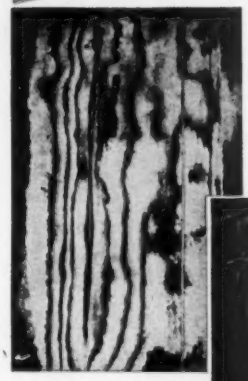
Keeps machines on the job...
Speeds work progress!

SOCONY-VACUUM

STOP Costly Abrasion with

Selfvulc
REG. U.S. PAT. OFF.

SELF COLD CURING PLASTIC AND LIQUID RUBBER COMPOUNDS FOR CORROSION AND ABRASION



BELOW—Same belt after resurfacing with anti-abrasion Plastic Rubber Compound. Its service life is doubled at a great saving. SELFVULC lasts twice as long as the highest grade rubber cover.

ABOVE—Section of conveyor belt worn down four to five plys — showing results of abrasion in carrying crushed stone, etc. Such belts are discarded and expensive replacements made.

SCORES OF USES

The superiority of SELFVULC as a protective coating and the ease with which it is applied, open a wide field of use for repairing, resurfacing, recovering and lining all types of equipment, such as:

Truck Cars	Cables	Tub Liners	Conveyor Belts
Classifiers	Hose	Flotation Cells	Tripper Chutes
Agitators	Tubes	Mixing Tubs	Screen Peaks
Impellers	Flooring	Sand Blast Parts	Hoppers
Baffle Plates	Cabinets	Ore Cars	Flumes

SELFVULC is "first aid" against **wear** and **tear**, and no storeroom should be without it. You can put it to the test in your own plant by sending for the TRIAL OUTFIT as described below.

MAIL THE COUPON WITH YOUR ORDER

SELF-VULCANIZING RUBBER CO., INC.
32 W. Randolph St., Room 1316, Chicago, Illinois.

☐ Please send me your **SELFVULC** Bulletin.

☐ Enclosed is my order for a **TRIAL OUTFIT**, including a 25-pound can of **SELFVULC** with cleaning fluid, primer, tools and instructions for applying.

NAME .....

ADDRESS .....

CITY ..... **STATE** .....

It is the contribution of the SELF-VULCANIZING RUBBER COMPANY, through the development of SELFVULC*, and equally important, the SELFVULC process to provide means of successfully defeating the inroads of both Corrosion and Abrasion. This is done, simply and easily, through the satisfactory application of rubber to the surfaces to be protected.

Before the advent of SELFVULC this use of rubber has been difficult, impractical and expensive. It was generally applied in sheet form. Heat and pressure were necessary, requiring elaborate machinery. SELFVULC has done away with all this.

SELFVULC can be applied by anyone. Its field of usefulness is unlimited, for it is made in both plastic and liquid form. It contains no sulphur, and requires no heat, for it is applied cold and vulcanizes itself in the air.

SELFVULC Products comprise plastic and liquid rubbers, both anti-abrasive and anti-corrosive. Primers for bonding these rubbers to various types of surfaces, Cleaners for preparing materials to be coated, together with tools for their simple application.

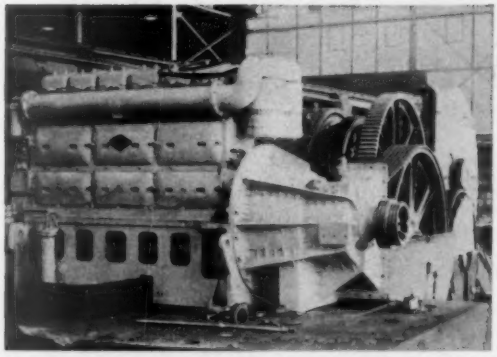
Do not confuse SELFVULC Products with the conventional systems of vulcanization. These require heat and such costly and special machinery that the work cannot be done on the premises. YOU APPLY SELFVULC YOURSELF IN YOUR OWN PLANT.

SELF-VULCANIZING RUBBER CO., Inc.

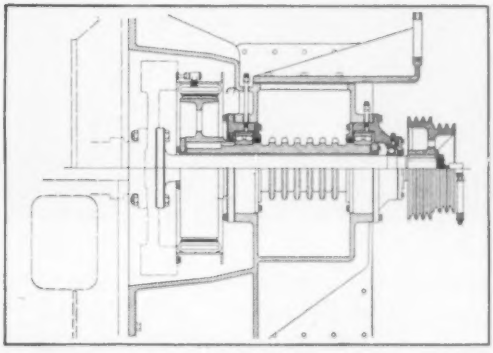
TRIAL OUTFIT $37.50

Torrington Spherical Roller Bearings operate smoothly under load in Lima-Hamilton Power Shovels

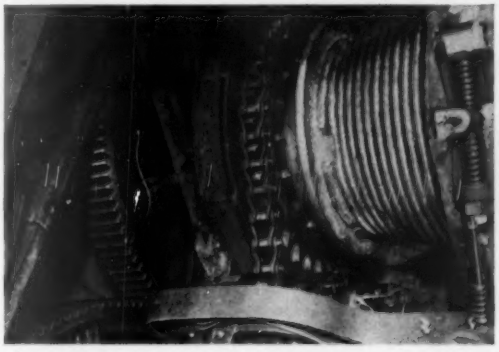
Every bite of the 6-yard dipper of this power shovel, built by Lima-Hamilton Corporation, subjects working parts to heavy loads. On the power take-off shaft, Torrington Spherical Roller Bearings provide freedom of operation despite deflection, and assure long, trouble-free service life.



The shovel is driven from this massive power take-off assembly through the chain drive and gear system at the right. Power is transmitted efficiently through a sprocket drive mounted on two Torrington Spherical Roller Bearings. These bearings carry thrust loads, preventing shaft end play.



Cross-section of the power take-off assembly shows how the Spherical Roller Bearings are used to provide automatic self-alignment. Uneven loading cannot develop under deflection. Thus, when loads are heaviest and the full bearing capacity most needed, the full area of roller-to-race contact is maintained.



On the rear hoist drum shaft, two Torrington Straight Radial Roller Bearings are used in the retract clutch housing. These bearings maintain concentricity of the shaft and housing for the life of the machine. In addition, Needle Bearings are used on lever shafts to provide high capacity with compact design.

High load capacity, free-rolling self-alignment and precision construction combine in Torrington Spherical Roller Bearings to assure long service life under adverse load conditions. For help in applying them to your equipment, call on our engineering staff. THE TORRINGTON COMPANY, South Bend 21, Ind., or Torrington, Conn. District offices and distributors in principal cities of United States and Canada.

TORRINGTON SPHERICAL ROLLER **BEARINGS**

Spherical Roller • Tapered Roller • Straight Roller Needle • Ball • Needle Rollers

You'll move more ROCK for your money, over the years, with a . . . .

MARION 4161

Sixty-five years have taught us what it takes to build REAL shovels . . . how to build qualities into them that don't meet the eye but are eloquent in terms of performance and dependability.

These extra qualities are MORE than worth every penny they cost.

THE MARION 4161
has made an impressive name over the years . . . one company owns 26 of these machines . . . and another has 25!

MARION is proud of the 4161 and its record . . . and stands behind this and every other machine that bears the MARION name.

We build good shovels and we back up every MARION owner only for one reason . . . it's the best way to give you more for your money . . . both for today and over the years.

MARION POWER SHOVEL CO.
MARION, OHIO, U. S. A.

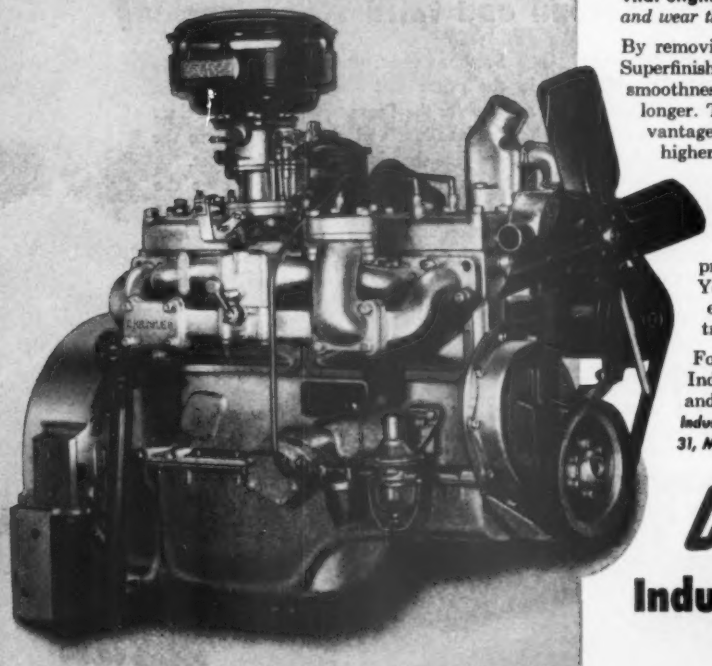
OFFICES AND WAREHOUSES IN ALL PRINCIPAL CITIES

from 3/4 cu. yd. to 45 cu. yds.

SO SMOOTH

that a pencil of babbitt metal leaves no mark— though it clearly marks all other metal finishes.

CHRYSLER SUPERFINISH



. . . the exclusive Chrysler way of surface finishing vital engine parts, *comes closer to eliminating friction and wear than any finishing method ever devised.*

By removing surface roughness left by machining, Superfinish produces almost unbelievable mirror smoothness. Superfinished parts fit closer and wear longer. That means greater utilization of the advantages to be found only in higher speeds and higher compression ratios.

Superfinishing is one of the big reasons why Chrysler Industrial Engines outperform, out-last and out-economize other similarly rated engines on practically every kind of job you can name. Yet, thanks to Chrysler mass production economies, you can buy a Chrysler Industrial Engine for less money.

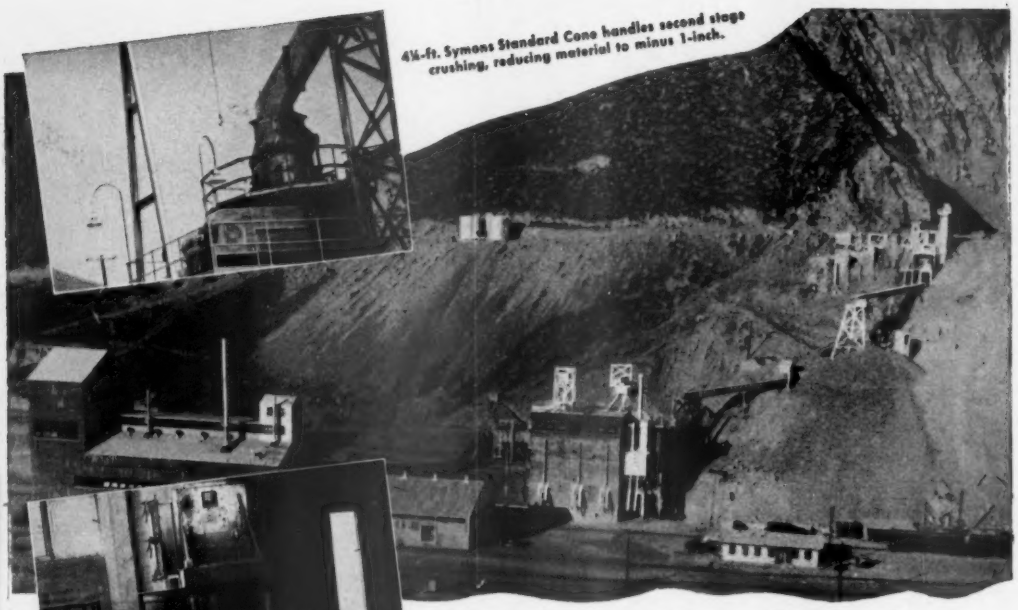
For eye-opening details, see your Chrysler Industrial Engine Dealer, or write us. Parts and service quickly available everywhere.

Industrial Engine Division, Chrysler Corporation, Detroit 31, Michigan

CHRYSLER

Industrial Engines and Power Units

HORSEPOWER WITH A PEDIGREE



4¼-ft. Symons Standard Cone handles second stage crushing, reducing material to minus 1-inch.

4-ft. Symons Short Head Cone operates in closed circuit for third stage crushing.

World's largest producer of Roofing Granules

USES SYMONS CONES

for second and third stage crushing

BENEFITING by years of successful operating experience with Symons Cone Crushers, Minnesota Mining & Manufacturing Company installed two Symons Cone Crushers in their Corona, California plant when it was built last year. A Symons 4¼ ft. Standard Cone handles all secondary reduction. Top-deck scalpings from a 3/16" mesh screen are reduced further in the tertiary crushing stage by a Symons 4-ft. Short Head Cone operating in closed circuit.

Symons Cone Crushers — the first choice in the other 3-M Co. plants, *were again selected* for the Corona plant because of their proven qualities and ability to produce the desired fine sizes in quantity at low cost.

Mines, mills and quarries all over the world are using Symons Cones to increase production and to keep operating costs low. Standard, Short Head or Intermediate types are available in capacities ranging from 6 to 900 tons per hour. Write for information.

NORDBERG MFG. CO.
MILWAUKEE 7, WISCONSIN

NEW YORK • SAN FRANCISCO • WASHINGTON • SPOKANE
MEXICO, D. F. • LONDON • TORONTO • JOHANNESBURG

C1149

OVER SHARP ROCKS, DEEP RUTS, MUD, SLUSH AND GRAVEL, *Generals* MOVE HEAVY LOADS OUT AND OVER THE HIGHWAY

Faster, Cheaper, Safer

Here's the answer to your tire problems. Two great General tires built to take bruising punishment on jagged strip mine roads. The *General L. C. M.* for trucks that work 80% in the stripping area—20% on the highway. The *General H. C. T.* for some work off the road—most work over the highway. A dual-purpose team to answer important hauling problems in your mining operation. More mileage, longer wearing, double-duty tires that mean big savings in time, labor and money to you.

★ L.C.M.—Extremely thick, tough tread cushions tire surface against snags and cuts. Tremendous self-cleaning shoulders throw off mud and rocks, while deep cleats develop powerful traction.

★ H.C.T.—Double-thick, tough tread. Greater blowout protection. Extra deep tread grooves develop extra traction through mud, slush and gravel . . . prevent slipping and spinning.

★ General's new underground mining tire with extra wide, extra deep tread. Tremendously thick sidewalls for extra protection; many extra hours of wear under punishing conditions. Easier steering, more traction.

The GENERAL TRUCK TIRE

THE GENERAL TIRE & RUBBER CO., AKRON, OHIO

★★★★★★ # SIX NEW STAR

NEVER HAVE SO MANY NEW UNITS OF ROAD MACHINERY MANUFACTURER

Four New Motor Graders

Now a Size to Fit Every Job and Budget!

★ **AD-4** 22,140 lbs. . . . 104 brake hp. . . . GM 2-cycle diesel engine.

★ **BD-3** 19,042 lbs. . . . 78 brake hp. . . . GM 2-cycle diesel engine.

★ **BD-2** 17,772 lbs. . . . 50.5 brake hp. . . . GM 2-cycle diesel engine.

★ **Model D** 8,500 lbs. . . . 34.7 brake hp. . . . Allis-Chalmers gasoline engine. A completely new low-cost motor grader with *exclusive* tandem drive. Engineered new from the ground up to bring you BIG grader design and performance advantages.

Note -- The popular Model AD-3, introduced just prior to the war, set the pattern for all these models. Provides 78 brake hp. . . . weighs 21,835 lbs. . . . has GM 2-cycle diesel engine.

Two New Diesel-Powered Tractors

★ **HD-19** With *exclusive* torque converter drive! Load and speed automatically balanced—up to 25% more work on many applications. Weighs 40,000 lbs. 163 hp.—GM 2-cycle diesel engine.

★ **HD-5** Weighs 11,250 lbs. 40.26 drawbar hp. — GM 2-cycle diesel engine. Simple to service, easy to operate . . . more work capacity. A great tractor with a fully matched Allied line.

These two new units, along with the widely used HD-7 and HD-10 tractors, complete the Allis-Chalmers crawler line.

LOW-COST MODEL D

PERFORMERS

Brought to You By Allis-Chalmers Since the War

THIS TYPE BEEN INTRODUCED BY ONE IN SO SHORT A TIME - - - - - - -

Here's proof that Allis-Chalmers plans far ahead to keep you ahead on your work! For it takes years of planning...building and rebuilding . . . testing and retesting . . . on each completely new tractor or motor grader.

What's more . . . A-C listens to you . . . incorporates *your demands*, as well as the forward thinking and design ideas of its own organization and Allied equipment manufacturers. This complete cooperation is behind every new Allis-Chalmers tractor or motor grader.

Compare the six new machines — feature by feature with any others — and you'll see why they are truly Star Performers. ASK YOUR ALLIS-CHALMERS DEALER FOR A DEMONSTRATION . . . NOW.

FLAGSHIP OF THE FLEET—
HD-19 WITH TORQUE CONVERTER

ALLIS-CHALMERS

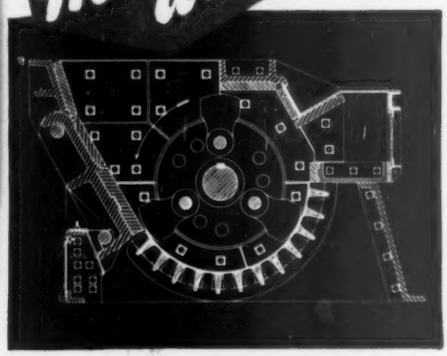
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Originator of the Torque Converter Tractor

25% to 75% SMALLER INVESTMENT

with a Williams "Super-Slugger" Crusher

Here's why



Feed opening 41"x 30" to 51"x 81". Hammer blows 10,800 blows per minute in the smallest size, each blow 1,285,200 foot pounds to 17,280 blows per minute in the largest size, each blow 2,893,760 foot pounds. Size of product quickly changed by using grates with smaller openings.

because it reduces power shovel loaded rock to 1½ inch or ¾ inch in one operation

In one operation! That means not only a saving in machinery, less depreciation by wear and tear, but the additional savings of foundations, conveyors, drives and buildings. Because the Super-Slugger is a heavy duty hammermill that can crush power shovel loaded rock down to feed size for fine grinding or to commercial crushed stone. Built to do a giant sized job because it's heavily reinforced at all parts subject to shock and wear . . . with extra heavy manganese steel liners. Shafts of unusually large diameter. The Super-Slugger is a real payload and profit builder! For detailed information write for bulletin 634.

WILLIAMS PATENT CRUSHER & PULVERIZER CO.
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WC-49-4

WILLIAMS ALSO MAKES—

Heavy-duty hammermills in smaller sizes for all quarry operations; impact and roller mills for 200 to 325 mesh grinding; drier mills; air separators; vibrating screens; steel bins; complete "package" crushing and grinding plants.

WILLIAMS

CRUSHERS GRINDERS SHREDDERS

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2-Speed Truck
AXLES

Reduce Maintenance Costs—
Make Trucks Last Longer

The exclusive features of Eaton 2-Speed Truck Axles assure extra service with freedom from repairs. *Only Eaton* Axles provide planetary gearing, which minimizes stress and wear because gear speeds are slower and gear loads are distributed over a number of teeth. *Only Eaton* Axles provide forced-flow oiling, which reduces friction because lubrication begins the instant the axle turns over. *Only Eaton* Axles provide a housing designed for abnormal service. *Only Eaton* Axles provide driving gears engineered for maximum durability. Ask your truck dealer to show you how Eaton Axles make available exactly the right gear ratio for every condition of road and load.

More Than a Million Eaton 2-Speed Axles in Trucks Today

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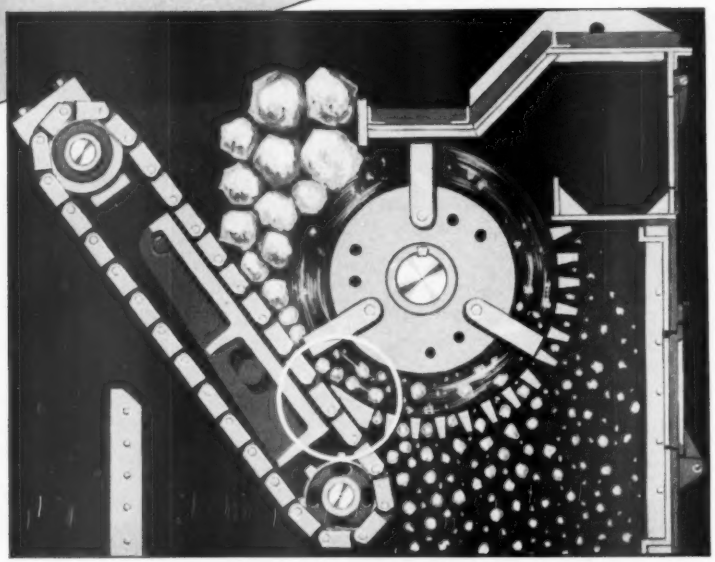
THE ONE and ONLY NON-CLOG

The Tried and Proven DIXIE Hammermill



Better crushing begins here! Cross section drawing illustrates "heart" of Dixie Non-Clog Hammermill where Extended Moving Breaker Plate construction guards against passage of oversize material . . . results in improved grinding control for unvarying uniformity of product.

Your ASSURANCE of GREATER PRODUCTION at LESS COST

The one and only Dixie NON-CLOG Moving Breaker Plate Hammermill* sets a new standard of crushing efficiency in the reduction of wet, sticky materials.

If you have wet, sticky material to crush, if you have difficulty in reaching and maintaining desired production, *if you have any crushing problem at all,* it will pay you to take advantage of this vastly improved crushing principle.

* *U. S. Patents Granted & Pending*

Dixie Non-Clog Hammermills are made in sizes ranging from 24" up to 72" diam.

WRITE TODAY FOR COMPLETE DETAILS

DIXIE MACHINERY MFG. CO.

MAIN OFFICE AND PLANT

4208 Goodfellow Ave., St. Louis 20, Mo.

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PRTD. IN U. S. A. B-G COST-SAVING BULLETIN No. 4905 12SM-AM-7-49

"MILLION DOLLAR PLANT" FEATURES OUTSTANDING BELT CONVEYOR SYSTEM

Simple Conveyor Proves Ideal "Second-story Man"

B-G Reversible Flat Belt Conveyor solves awkward package handling problem.

Moline, Ill.: — Getting a variety of packaged goods — sacked cement and lime, kegs of nails, bagged insulation, furniture and hardware—into and out of the second story of their warehouse was a problem that caused Moline Consumers Company to call in its local B-G distributor. The simple, low-cost solution is shown above — a B-G Flat Roll Belt Conveyor, adaptable to both inclined and horizontal use, and equipped with a serrated belt to grip smooth packages and prevent slipping.

Important to the success of this conveyor is the fact that it is powered by a reversible 5 h.p. motor. Thus, it acts both as an unloading and loading unit — from dock to warehouse, from warehouse to dock.

Uses 15 B-G Conveyors to Move Sand and Gravel from Pit to Dock

Port Washington, N. Y.:—The aggregate industry, widely noted for its large scale and efficient use of belt conveyors, offers few examples more outstanding than the Port Washington plant recently purchased by Colonial Sand Company. Designed by Merritt, Chapman and Scott Company, this million-dollar, all steel and concrete plant has had notable success in cutting the cost of moving material from pit to plant to loading dock.

High Capacity Conveyor Setup Is Flexible, Semi-Portable

Three thousand feet of B-G Conveyors—fifteen units in all—underlie the high capacity of this plant and provide the flexibility required for changing setups and relocating conveyors as the need occurs.

In contrast to rigidly permanent conveying setups, the B-G Conveyors are made up of standard "packaged" units with a high degree of interchangeability that simplifies assembly and disassembly for lengthening, shortening or relocating on the job.

Three field conveyors, fed by electric shovels, feed the field hopper, and another conveyor carries material to a crusher-scalper unit. From here, via six other separate conveyors, material is scrubbed, screened, separated and stockpiled. A B-G Radial Stacker is used to stockpile sand only. From storage, a 682-foot conveyor carries materials under a roadway to a nearby dock where they are loaded onto barges by a B-G Dock Conveyor, and shuttle-type barge loading conveyor.

Loading barge at Port Washington plant. Shuttle conveyor permits loading barges on either or both sides of the dock.

Foundry Eliminates Costly Hand-Loading of Heavy Material

Chicago, Ill.:—There's a fine example here in the Pyott Foundry of how easily and simply a single short B-G Belt Conveyor can replace hand methods and cut costs to rock bottom. This company had installed a briquet-making machine to reclaim cast iron borings and turnings, for final re-use in its own furnaces. Loading this heavy material into the 12-ft. high hopper was far too costly and inefficient when done by hand—a back-breaker, at best.

So, a lightweight, low-cost 36-ft. B-G Permanent Conveyor was installed to do the job. Equipped with a small three-sided loading hopper at the foot end, it takes scrap brought from the foundry in hand wheelbarrows, and elevates it to the briquet machine hopper at the touch of a button.

Effective use of simple B-G Conveyors is one way in which plants of all types are minimizing the expense of moving all sorts of bulk and packaged materials. Volumes do not have to be large to justify their low cost. This job involves only four or five tons per day, which could not be handled so efficiently with any other method.

(See photo below)

140852

B-G Belt Conveyor economically elevates heavy scrap material.

Doubles Capacity, Lowers Cost with B-G Conveyor

Punxsutawney, Pa.:—Increased unloading capacity and lower maintenance cost were the objectives when the Kurtz Coal, Lumber and Building Supply Co. here decided to replace a vertical bucket elevator with a single 175-ft. B-G Permanent Belt Conveyor.

To date, over 250 cars of 1-inch and 2-inch stone have been unloaded and over 12,000 tons of stone unloaded and stacked. The final result: Plant capacity doubled, and not a cent for repairs.

84749

Order and efficiency are reflected in the clean lines of this compact yard.

Ready-Mix Plant Simplifies Unloading and Storing Operations

Costly, Complicated Equipment Eliminated by Radial Stacker and Conveyors

St. Petersburg, Fla.: — Operators of the Pinellas Lumber Company, progressive local cement block and ready-mix plant, look with satisfaction on their profit-making aggregate-handling belt conveyors. Where before there was a complicated system of shuttle and tripper assemblies — costly to operate and maintain — now a simple B-G Radial Stacker and four economical B-G Permanent Conveyors have taken over.

For surge capacity, about 2500 tons of aggregate are kept available. This is received in hopper bottom cars and discharged onto a 12-ft. feeder conveyor which in turn discharges into a 48-ft. permanent conveyor at right angles to the feeder. This conveyor supplies the 78-ft. radial stacker which is mounted on railway wheels running on a rail on a low concrete structure.

Thus a kidney-shaped pile of aggregate separated into four compartments is always maintained. This pile covers an 80-ft. tunnel conveyor, fed by eight gates, which supplies the 201-ft. mixing and batching conveyor.

Radial stockpiling of bulk material, a B-G development, has many advantages: It minimizes space required for storing several classes of material, it facilitates quick and easy reclaiming and requires a bare minimum of manpower.

Four-Flight Conveyor Replaces 6½ Miles of 6% Grade Track

Roanoke, Va.: — For years, the Blue Ridge Stone Corp. has used six railroad locomotives to haul limestone from the quarry three-quarters of a mile to the processing plant. This required 6½ miles of track and negotiating a 6% grade. Now a four-flight B-G Belt Conveyor is doing the job at a 350 tons per hour clip, and further improving operations by maintaining a 24-hr. stock pile at the plant. The first three flights of the system haul stone from quarry to stock pile. The fourth delivers from stock pile to plant. Here 3,798 ft. of B-G Conveyors replaced far more costly and far less efficient equipment.

B-G Radial Stacker Solves Asphalt Problem

Thornton, Ill.: — Highly portable B-G equipment accomplished results normally achieved only by costly permanent units for the Gallagher Asphalt Company. For a bituminous resurfacing contract, the company had to unload the stock pile well ahead—over 53,000 tons of aggregate. A B-G Radial Stacker, fed from a B-G Belt Feeder, unloaded and stored up to 24 cars per day. Storage was over two steel tunnels each equipped with a B-G Belt Conveyor, one for sand and one for stone. Reclaiming the proper combination via these conveyors was simple and inexpensive. Typical of B-G standardized design, these conveyors are easily dismantled and reassembled for relocation and re-use on other jobs.

ECONOMICAL TWO-MAN OPERATION IN THIS 150 FINISHED TONS PER HOUR OHIO PLANT

B-G Conveyors, Crusher and Bucket Loaders Provide Required Flexibility for Job

Wapakoneta, Ohio:—Two men are all that are required to handle the extensive operations of the Wapak Sand and Gravel Company near here. This plant covers 80 acres, yet the one dragline operator and the one supervisor at a central control panel which operates the five B-G Conveyors, Feeders and Crushers, keep the entire operation going.

A fine example of efficient layout, the plant is set up ideally to minimize machine and man-hour requirements. The 1¾-yard dragline at the pit loads a surge hopper over the first B-G Conveyor which feeds the B-G Ebersol Crusher. Another B-G Conveyor carries the aggregate from there to the main plant. After processing, the material is delivered to one of three 78-ft. B-G Radial Stackers which stockpile sand and gravel separately.

All material is loaded from the stock piles by two B-G Loaders — one pneumatic-tired and the other crawler-mounted.

Operating at a capacity equal to many plants equipped with extensive and permanent installations, this plant has actually no permanent construction other than the small footings under the radial stackers and the screening machinery. The B-G Conveyors are easily moved, relocated, lengthened or shortened. A spare swing conveyor is kept on hand against the time when the excavating must be further away from the plant. Thus the whole operation is on a flexible and highly efficient basis.

General view of Wapak Sand and Gravel Co. setup illustrates modern aggregate production at its best; continuous flow of material is maintained at low cost through use of B-G Belt Conveyors and Barber-Greene Ebersol Crusher.

Barber-Greenes at Azuza Make Show Place for Industry

Considered to be one of the showplaces in the industry, the Azuza Rock and Sand Company's plant represents an ideal use for belt conveyors, as built by Barber-Greene to the exacting specifications of the company's management. For more than a thousand feet the pit-run aggregates are brought by belt conveyor from deposit and lifted 175 ft. to plant. Push-buttons start and stop equipment in proper sequence.

Three B-G Standardized Truss Conveyors supply the operation. In unit one of the plant a 36-in. Conveyor, 300 ft. long, carries material from the primary crusher to a 36 in. x 200 ft. B-G Stacker Conveyor, which builds the 7,000-ton live surge pile. Running from a 120-ft. concrete tunnel beneath the surge pile, a 36 in. x 518 ft. B-G Conveyor is synchronized to feed the washing and processing tower, which operates independent of unit one.

The 450 tons per hour capacity of this B-G equipped plant is great by any standard. Fifty dump trucks and 17 ready-mix trucks are kept busy distributing this plant's products in addition to the bulk of the production, which goes out by rail.

General view of Azuza Sand and Gravel Plant, showing two of the three B-G Conveyors, which maintain the raw material supply for the 450 tons per hour finished production.

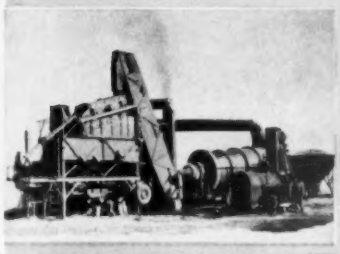
THE B-G LINE CUTS COSTS ALL ALONG THE LINE...

See Barber-Greene for:

B-G BUCKET LOADERS: Crawler or pneumatic tire mounted. For low cost truck loading of bulk materials.

B-G DITCHERS: Crawler and pneumatic tire mounted, for digging trenches from 5½" to 24" wide and to 8' 3" deep.

B-G PORTABLE CONVEYORS: For moving all bulk materials and packaged goods. Variety of lengths, belt widths and capacities. Electric or gasoline power.



B-G BITUMINOUS PLANTS: Highly portable plants for producing all types of mixes—up to 120 t.p.h.

B-G FINISHERS: Automatically place smooth, compacted surface regardless of variations in subgrade.

B-G COAL YARD EQUIPMENT: Belt and chain-and-flight Portable Conveyors; self-propelled, pneumatic-tired. Also, hopper-car Unloaders.

Use Barber-Greene's 30 Years of Experience to Help You Plan Your Job. It can be Valuable and is at Your Service

It always pays to eliminate guesswork. Barber-Greene offers you the benefit of over thirty years' experience in designing and building equipment proved year after year on jobs—and in industries—like yours. Barber-Greene's Representatives are material handling specialists with practical experience in successfully applying the right machine to jobs like yours. Consult your Barber-Greene Distributors, or write directly to Aurora, Illinois, for information you need to do your job most profitably.

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Cable address "Bargreene"

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material

_____

_____
other specifications

( ) Information on _____
other B-G equipment

( ) Have a Representative Call

Name _____

Company _____

Position _____

City _____ Zone _____ State _____

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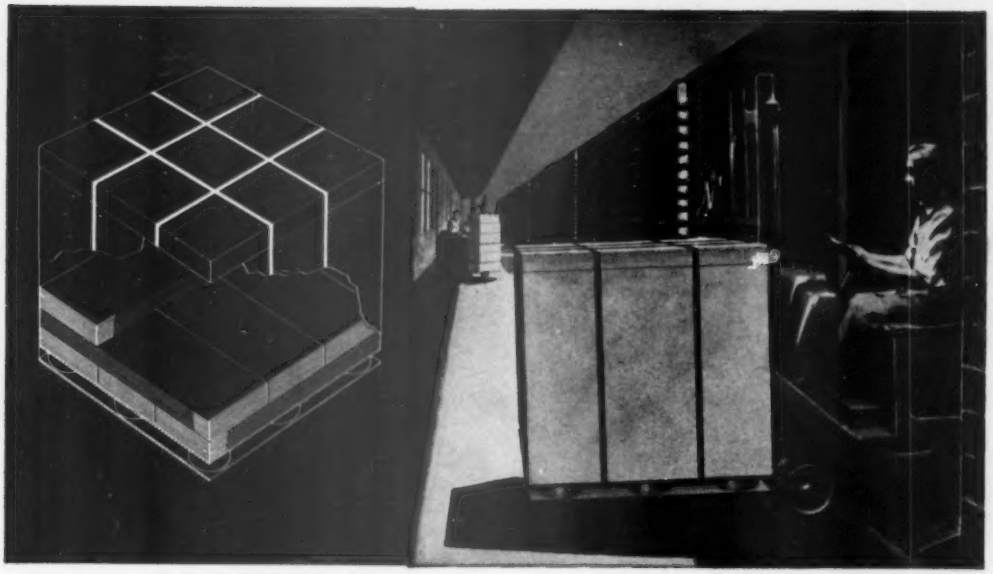
Before You Bid . . .
Before You Buy . . .
Send This Coupon!

The coupon will bring you complete information on any Barber-Greene machine without cost or obligation.

We will be glad to have our representative call to discuss your material handling problems with you.

We maintain a Department for the sole purpose of solving your material handling problems.

BARBER-GREENE COMPANY
Aurora, Illinois, U.S.A.



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digging, rehandling,

storing, batching, mixing

SAND - STONE - CEMENT

In our 37 years, helping to build "A Greater AMERICA", we have developed a complete line of buckets. These are fitted to crane, boom, material and job conditions. Booklet 2L-2 describes our contractor's buckets. ERIE pioneered batch-weighing of aggregates, nearly 30 years ago, and offer a complete line of Aggre-Meter Plants to meet any storage and batching need for sand, stone, cement or other bulk materials. Erie was first to put a complete "Central-Mix" concrete plant on wheels. You can move it up to 30 M.P.H. and make up to 40 cu. yards of concrete per hour on the job. Write for new ERIE Portable Concrete Plant Bulletin SP-2.

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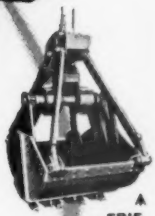
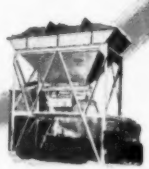
ERIE WIDE REHANDLER

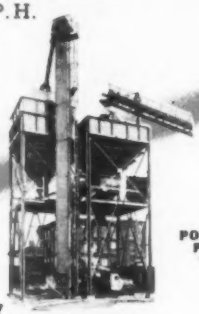


ERIE HARD DIGGER

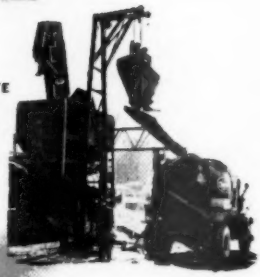
ERIE GENERAL PURPOSE



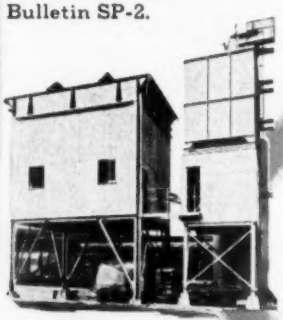
ERIE GA-36 YARD PORTABLE BIN



ERIE TYPE LA1 CEMENT BIN WITH ERIE CTC AGGREMETER PLANT

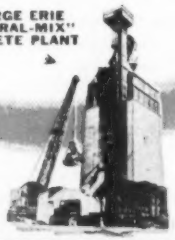


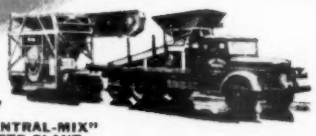
ERIE STRAYER PORTABLE CONCRETE PLANT CHARGING "TRUCK-MIXER"



A ERIE TYPE CAB AGGREMETER PLANT WITH ERIE TYPE M CEMENT BIN

A LARGE ERIE "CENTRAL-MIX" CONCRETE PLANT





ERIE "CENTRAL-MIX" CONCRETE PLANT IN TRANSIT

ERIE

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Rueben's Quarry of Superior Stone Company, Raleigh, North Carolina, operates modern equipment to produce approximately 2,500 tons per nine-hour day.

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help us keep output up, costs down,"

says R. B. Arthur, Vice President

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Superior Stone Company is one of many leading quarry operators who use Gulf quality lubricants and fuels as basic profit insurance. Here are the important reasons: Gulf gasolines and Diesel fuels are clean burning, have exceptionally low carbon content, and provide more efficient power.

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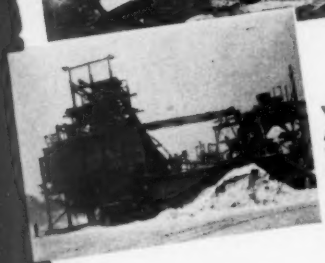
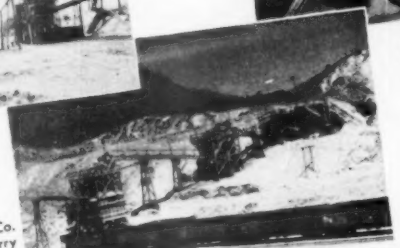


VIRGINIA
Arlington Stone Co., Leesburg, Va., produces crushed trap rock in 5 sizes to bituminous surfacing specifications.

OHIO
Camp Dennison, Ohio, all-Telsmith plant, one of six large plants of the Ohio Gravel Co., Cincinnati.

WASHINGTON
Alongside the Columbia River... crushing and washing plant of Howard Smith, Vancouver, Wash.



GEORGIA
Tyrone plant, Tyrone Rock Products Co. of Atlanta

WISCONSIN
Waupaca Sand & Gravel Co. plant, Custer, Wis., owned and operated by F. F. Mengel Co.

NEW MEXICO
Sharpe & Fellows Contracting Co. of Los Angeles, Calif., quarry plant near Albuquerque.

MP-6-R

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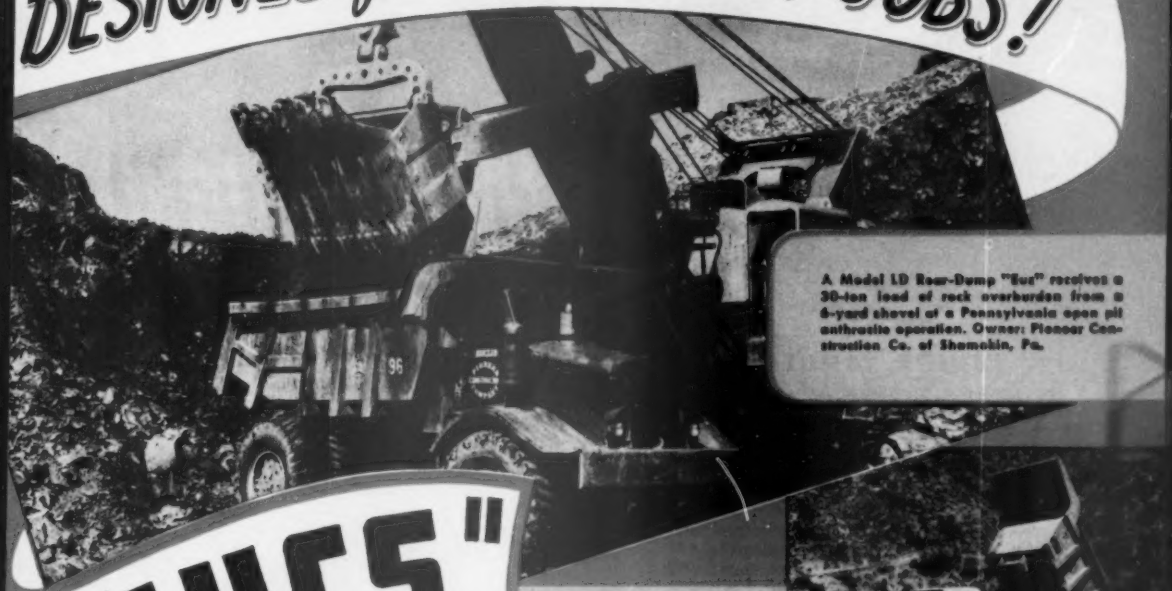


A Model LD Rear-Dump "Euc" receives a 30-ton load of rock overburden from a 6-yard shovel at a Pennsylvania open pit anthracite operation. Owner: Pioneer Construction Co. of Shamokin, Pa.

"EUCS"

22 tons of overburden from an open pit copper mine in Arizona are dumped over the waste bank by a Model TD Euclid. Isbell Construction Co. of Reno, Nevada owns a large fleet of these Rear-Dumps.

Assure HIGH PRODUCTION at LOW COST

Rear-Dump Euclids are built for long, efficient service in open pit mines and quarries and off-the-highway construction and industrial work. For moving rock, coal, ore, overburden, and other heavy excavation, Rear-Dump "Eucs" have the capacity and speed to haul bigger loads faster and at lower cost per ton or yard moved.

There are models for every hauling requirement... and body designs for all types of materials. Rear-Dump Euclids of 10 to 34-ton capacity are ruggedly constructed to withstand the impacts of loading heavy excavation and hauling over rough roads. Outstanding features include the Euclid planetary type drive axle for long life and continuous performance... sturdy body with smooth interior and flared rear chute... welded frame of tremendous strength... fast, double-acting hydraulic hoist... and loaded travel speeds up to 35.4 m.p.h.

The parts and service facilities of Euclid's world-wide distributor organization assure prompt, efficient service wherever Euclids are used. Write for complete information on the Euclid line of earth moving equipment or see your distributor . . . today!

The EUCLID ROAD MACHINERY Co. Cleveland 17, Ohio

EUCLIDS *Move the Earth*

for CHEWING ROCK . . .

Cedarapids Built by IOWA

Highest Quality Equipment means

JUNIOR TANDEM

A rock-chewing workhorse for an all-around variety of rock and gravel jobs, quality-built for big volume production and low-cost operation. The Cedarapids roller bearing jaw crusher used is engineered for maximum capacity and minimum maintenance; exclusive bearing seals reduce lubrication time and expense; heavy, counterbalanced flywheels slash power requirements. The high capacity, heavy duty roller bearing roll crusher is made with manganese steel roll shells to guarantee long wear and economy. Cedarapids *horizontal* vibrating screens provide more accurate grading, larger capacity, better screening action and lower maintenance. In addition to these cost-cutting quality advantages, you get capacities ranging from 70 to 100 tons per hour, *and more,* of 1" material. Complete portability, plus fast set-up and take-down, gets machines on the job fast. It's a money-maker on any rock or gravel job!

4033 HAMMERMILL SECONDARY

HERE'S a peak-efficiency machine for a wide variety of reduction jobs. 100 to 180 tons of 1½" roadstone, or 20 to 60 tons of agricultural limestone, or a percentage of both can be produced in one operation. The Cedarapids heavy duty hammermill features a new principle of crushing to give a larger output of finer and more uniform finished products, and will produce more tons per hour than other comparable types of pulverizing equipment. A separate power unit with variable speed control operates the hammermill to produce the type of finished product desired without affecting the speed of screens and conveyors. Convenient portability, fast and easy set-up and take-down, minimize lost time between jobs. And for double duty service that puts money in your pocket, you can interchange the 4033 hammermill unit with a 4024 Cedarapids roll crusher to make this plant a high volume rock crushing secondary.

Buy the best . . . Buy Cedarapids

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U.S.A.

BIG VOLUME OUTPUT
MINIMUM MAINTENANCE
LOW COST OPERATION

Cedarapids
BITUMINOUS MIXING
Equipment

MODEL "E"
BITUMINOUS MIXING PLANT

FOR "spouting blacktop" in volumes to meet your biggest production needs. This all-electric batch type plant handles 2000, 3000, or 4000 lbs. per batch, combining high capacity and accurate batching with great portability and economy. Perfectly matched screens, batchers, pug mills, elevators and driers meet the most exacting specifications with a smooth, steady flow of material. The Cedarapids-Symons horizontal vibrating screen, with the driving unit mounted outside the hot zone, is fully protected from heat and dust. Cedarapids famous twin shaft pug mill thoroughly mixes the bitumen and aggregates at high speeds. Aggregate is thoroughly dried by Cedarapids driers. Individual electric motor drives on all units assure smooth, efficient operation and low maintenance costs. Push-button controls are centrally located within easy reach and sight of the operator.

MODEL "FA"
BITUMINOUS MIXING PLANT

PORTABILITY plus! The Model "FA" is the most portable batch type bituminous mixer in the Cedarapids line, and can be set up for operation in a matter of hours. Just lift the top section of the elevator, extend the bottom section and install the cover; drop the operator's platform and lower section of the skip track into position; raise the skip head pulley frame; level up the scale frame and the "FA" is ready to grade the aggregates, weigh the material, mix it to meet the most rigid specifications, and do it all at lower cost. The perfectly matched screen, 25 cu. ft. batcher and pug mill, and elevator will produce as much as 350 tons per day. Centralized air controls insure fast, easy, one-man operation. Quality construction of every part means long-term service at lowest cost operation and maintenance.

Cedarapids
Built by IOWA

The IOWA LINE of Material Handling Equipment Includes:
ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • BUCKET ELEVATORS • VIBRATOR AND REVOLVING SCREENS • STRAIGHTLINE ROCK AND GRAVEL PLANTS • FEEDERS • TRAPS • PORTABLE POWER CONVEYORS • PORTABLE STONE PLANTS • PORTABLE GRAVEL PLANTS • REDUCTION CRUSHERS • BATCH TYPE ASPHALT PLANTS • HAMMER-MILLS • DRAG SCRAPER TANKS • WASHING PLANTS • SOIL COMPACTION UNITS • STEEL TRUCKS AND TRAILERS • GIANT IMPACT BREAKERS

A NEW ALL STAR CAST

THE NEW TD-24

The new TD-24 offers you more horsepower than any other crawler tractor available today—180 hp. at the flywheel, 140 hp. at the drawbar—plus dozens of features found only in the new TD-24.

THE NEW TD-14A

The new TD-14A has 60 drawbar horsepower and many mechanical improvements. Here is additional power to push, pull and lift—power to make your operations more profitable.

THE NEW TD-18A

Famous for its power and dependability, the new TD-18A now gives you 87 drawbar horsepower. All the famous International diesel engine features plus the durable construction of this new International TD-18A make this tractor an even more valuable and profitable worker than before.

Your International Industrial Power Distributor is now ready to furnish you these three great new stars of mobile power to help improve your production—the new TD-24, the new TD-18A and the new TD-14A.

The great new TD-24 is America's most powerful and versatile crawler tractor with unmatched features for easier operation and far greater work capacity. No other crawler tractor can give you all the features found in the new International TD-24.

And the other two stars on the new International power-packed team are the TD-18A and TD-14A. Known for years for their dependable performance, these two efficient tractors have had their power increased to do more work, to operate with even greater ease and economy than before.

See your International Industrial Power Distributor now. Find out the facts and get these new tractors to work for you. You'll have an all-star cast on your stripping and rock handling line-up.

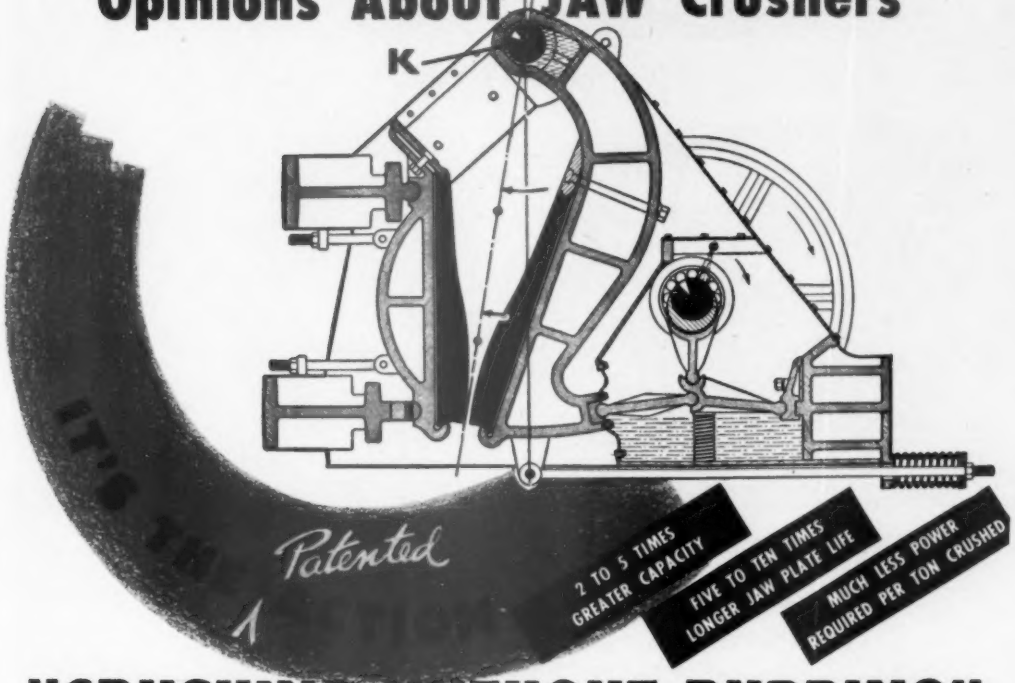
INTERNATIONAL HARVESTER COMPANY, Chicago, Ill.

CRAWLER TRACTORS
WHEEL TRACTORS
DIESEL ENGINES
POWER UNITS

INTERNATIONAL HARVESTER

INTERNATIONAL INDUSTRIAL POWER

The *New* KUE-KEN *is* Changing Opinions About JAW Crushers



"CRUSHING WITHOUT RUBBING"

Blake or Double Toggle Crusher
(Designed 1858)

Note how swing jaw forces rock upward causing rock to rub against jaws (see arrows). This rubbing action rapidly wears jaw faces, increases the percentage of fines, and reduces capacity of the crusher.

Dalton Overhead Eccentric or Single Toggle Crusher
(Designed 1879)

Moving jaw forces rock both up and down (see arrows), causing a rubbing action that not only results in excessive fines, but causes heavy jaw plate wear and wasted power. Bearing pressures on this type are very high.

Until the new Kue-Ken came on the market, most operators (and engineers) held an understandably low opinion of jaw crusher efficiency. The old double toggle and overhead eccentric types (left) were heavy, slow speed, unbalanced, poorly lubricated machines that crushed with a rubbing motion between the jaws, resulting in rapid jaw plate deterioration, excessive fines, power waste, and low capacity.

Kue-Ken design has changed all this, because the Kue-Ken crushes by *pressure only*. With its hinge pin (K) located on the crushing zone center line, the Kue-Ken's massive swing jaw moves *squarely* against the rock (or other material), instantly gripping and crushing—without forcing rock upward; without rubbing. Result: greater capacity, longer jaw plate life, fewer fines, and less power demand.

A Texas plant reports that its Kue-Ken Jaw has crushed 225,000 cu. yds. of hard, wet river gravel during a 4 year period. No parts or replacement costs or out-of-service from breakdowns; only *minor service adjustments*. Don't turn down a Jaw for the job until you've investigated the Kue-Ken, the *improved* jaw crusher. Send for Bulletin 5012.

Exclusive Eastern Manufacturer and Distributor

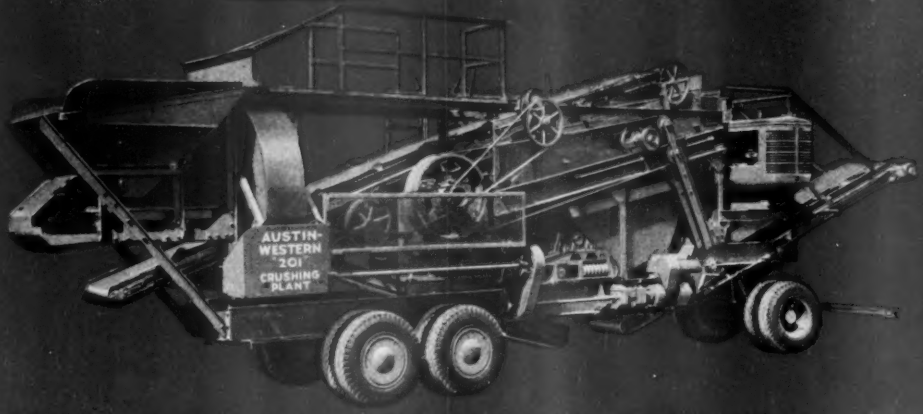
PENNSYLVANIA CRUSHER COMPANY

Liberty Trust Building, Philadelphia 7, Pa.

New York • Boston • Pittsburgh • Birmingham • Roanoke • Detroit • Chicago • St. Louis • Crosby, Minn. • Los Angeles — Associated with Fraser & Chalmers Engineering Works, London

Manufacturers of • Hammermills • Single Rolls • Bradmills • Kue-Ken Jaws • Kue-Ken Gyracones • Granulators • Impactors • Bradford Breakers

The New "201" CRUSHING and SCREENING PLANT



The shovel-loading hopper is fitted with inclined grizzly, and mechanical feeder. All principal units are shaft and V-belt driven. Notice the fully-enclosed brakes.

You'll Like Its—

HIGH OUTPUT. With its jaw and roll crushers, the "201" is capable of producing especially large amounts of ¾" and smaller product.

CHOICE OF FEED. The "201" may be had with either shovel-loading hopper, or swivel drive for separate feed conveyor.

READY PORTABILITY. The "201" is of a size and weight that can be transported over most highways without a special permit.

ENCLOSED BRAKES. Hydraulic brakes, mounted on the *outside* of the wheels, are dustproof and watertight.

TOP-NOTCH ENGINEERING. All bearings of anti-friction type; all principal units, shaft and V-belt driven; all moving parts well protected by guards.

The full-length platform provides a close view of the screen. The clutches can be operated from the platform, or from the ground.

When fitted with shovel-loading hopper, the "201" Plant is completely portable. No parts need be removed for transporting.

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U. S. A.

BUILDERS OF ROAD MACHINERY

Austin Western

SINCE 1859

A SAFER, SOUNDER CABLE

WITH NEOPRENE INNER-BELT AND FILLER COMBINED

The new construction of this Securityflex cable—combined inner-belt and filler of a new, heat-conducting Neoprene compound—greatly increases its operating safety factor. Under extreme overload conditions, the inner-belt dissipates heat and provides cooler operation.

Other features—extra-tough, *flame-resistant* outer jacket, seine twine reinforcing that *resists tearing* and engineered construction that *eliminates kinking*—contribute to the better performance and longer life of this new Securityflex cable.

New inner-belt construction operates cooler under extreme overloads

ANACONDA

ANACONDA *Securityflex** **CABLE**

STROH

Diagonally Cored SPLIT TIRES

Two Segment Type Splits Welded in the Field

Stroh Diagonally Cored Split Tires — splits welded in the field — are now in successful service on Driers, Kilns and Coolers in many plants throughout the country.

This tire can be quickly and easily installed with a minimum of down-time, without tearing out a section or disturbing the existing alignment of a shell.

It has no finished mating surfaces held together by bolts to loosen up under the action of the load and heat. Any radial section through the welded joint has a very large percentage of parent metal to withstand the stresses to which it is subjected.

After welding the tire is round—the weld metal laid into the diagonal split does not "hump up," the welded joint rolls smoothly over the trunnion roller.

Write for Catalogue and full information

The illustration shows a Stroh Diagonally Cored Split Tire, installed on an eight foot Drier. Time of installation, including reaming of holes and riveting of seventy-two rivets: thirty-six hours.

STROH
PROCESS STEEL CO.
PITTSBURGH (12), PA., U.S.A.

CREATING *nothing* TO ASSURE LONG LASTING SERVICE

QUAKER HOSE IS VACUUM "PRE-TESTED" FOR STRENGTH OF WALLS... DURABILITY IN TOUGH SERVICE

If it has the Quaker trade-mark, it must be right. Each type of hose must meet rigid "pre-tests" before it is shipped for service in the rock products industry. Scientific pre-tests that subject hose to torture-tests more severe than will ever be encountered in the toughest service, are conducted right in Quaker plants.

One of these steps in "pre-testing" Quaker Hose is shown above. A vacuum test that puts Quaker Hose through the paces to provide rubber products for the rock products industry that are second to none in quality.

This is only one of the eighteen rigid tests that raw materials and finished products must pass before receiving the Quaker stamp of approval. Yes, "pre-testing" of Quaker belting, hose and packings provides quality, and long service... assures worthwhile dividends for your operations through less time outs for maintenance, higher efficiency, lower cost per hour.

PACKINGS THAT PRESERVE POWER

Quaker pump packings are pre-tested for size, shape and quality to assure perfect fit, long service, maximum power.

BELTS THAT BOOST POWER

Quaker's complete line of conveyor and transmission belting for every requirement in the rock products industry, is pre-tested and service-proved to provide sure-grip . . . slip less...save power.

QUAKER RUBBER CORPORATION

PHILADELPHIA 24, PA. • New York 7 • Cleveland 15 • Chicago 16 • Houston 1

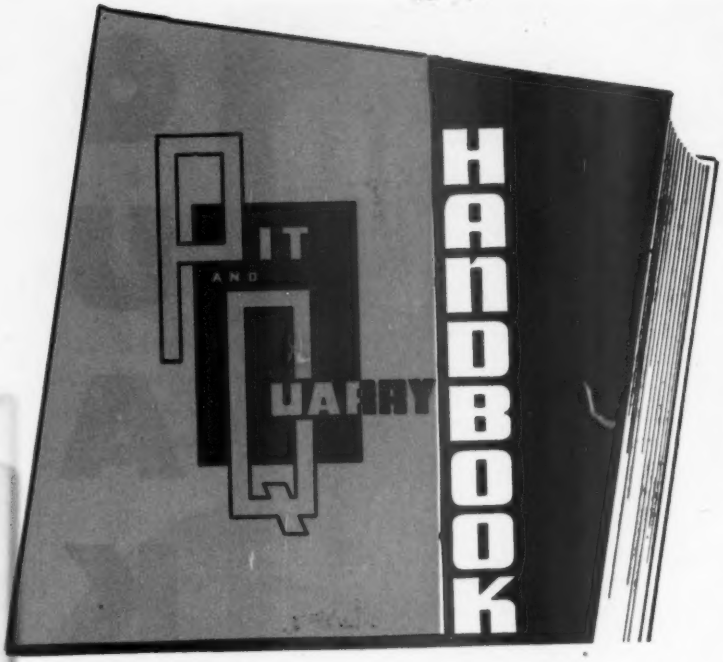
Western Territory

QUAKER PACIFIC RUBBER CO • San Francisco 10 • Los Angeles 21 • Seattle 4

QUAKER

RUBBER PRODUCTS

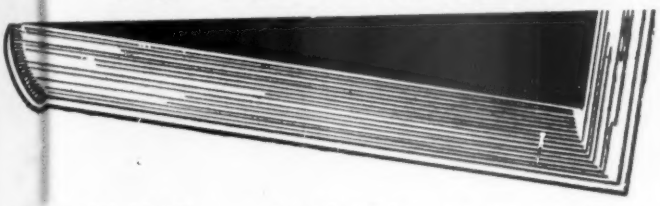
REG. U. S. PAT. OFF.



An Indispensable Tool For Both Operator and Supplier of Equipment

The pit-and-quarry industries, in providing important basic raw materials, bear a large share of the responsibility for the success of America's industrial effort. For the producer the revised Technical Section of the 1949 Handbook provides a ready answer for many of his operating problems. For the concern supplying him with the machinery and equipment necessary to produce his materials, the 1949 Directory Section provides an accurate, up-to-the-minute list of all known producers of nonmetallic minerals and their products. No effort or expense has been spared to make the new Directory an efficient and highly useful source of information about producers. The number of changes made in the 1949 edition runs into the thousands.

1949 Edition—Order Now



Directory Section listings appear two ways — (1) alphabetical by companies, (2) geographical by plants. You get company names, officers, location of plants, their capacity, and the names of the men who do the buying.

- 912 PAGES
- 27 CHAPTERS
- AUTHORITATIVE
- 15,000-NAME DIRECTORY
- COMPLETELY INDEXED

Order NOW! Use the handy coupon below.

Pit and Quarry Publications
538 South Clark Street, Chicago 5, Illinois

Date .....

Please send me

—copies of the 1949 Handbook and Directory bound together at $15.00

—copies of the 1949 Directory bound separately at $15.00

☐ Check is enclosed

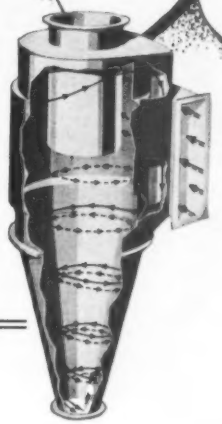
☐ Mail me the bill

Name ..... Title .....

Company .....

City ..... Zone..... State .....

Minutely precise planning is vital in RECOVERING VALUABLE DUST



Butterfly net promises

to catch everything are unrealistic in trapping fines, ultra-fine and finer-than-that in dust particles. But Buell adjusts its equipment *and your costs* to do a maximum job where results are tangible. No guesswork, no overall assumptions; but a special laboratory analysis of your dust into fractions of different micron-size grading—and a guaranteed performance on each fraction . . . Scientifically arrived-at assurance of potential results is a fundamental part of Buell's engineering service. It is freely available, with no obligation whatsoever. Bring us your problems . . . or, as a preliminary, let us send you 'Engineered Efficiency in Dust Collection'. Write: Buell Engineering Company, 70 Pine Street, Suite 5055, New York 5, N. Y.

buell

Engineered Efficiency in **DUST RECOVERY**

Manufacturing in the United States and Canada for shipment throughout North and South America.

IT COSTS LESS TO OWN THE BEST!

Stone Preheater, Soaking Pit & Deheater

Recovers and utilizes exit gases
Increases capacities up to 20%
Shows fuel savings of 40%

CONSIDER THESE FEATURES

MINIMUM MAINTENANCE

- *No moving parts*
- *Practically NO maintenance*
- *Eliminates all overburning or underburning*
- *Quick adjustment and ease of control*
- *Decreases ring formation*
- *Heat radiation loss held to minimum*
- *Uniform operation, all stone receives same treatment*

The use of a KVS Preheater, Soaking Pit and Deheater on a rotary lime kiln provides an ideal combination that reduces cost and maintenance, increases production, improves quality.

Tests first proved the value of this method during the war years. Figures supplied by responsible users, NOW show even more satisfactory results, made possible through KVS advanced engineering.

If you are interested in an installation that will earn extra profits for YOU, year-in, year-out, investigate the advantages of this scientific, labor-saving, money-making lime production equipment.

Let a KVS engineer demonstrate how this preheater can be utilized on a short kiln. We can help you reduce costs, increase production, add to your profits and prove that it "Costs Less to Own the Best."

Send for bulletin describing, fully, KVS Lime production equipment

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

TWO PARK AVENUE, NEW YORK 16, N. Y.

WICKWIRE ROPE

A PRODUCT OF CF&I

Ask any user . . . you'll find them everywhere

In scores of industries, users of Wickwire Rope have developed an affectionate respect for its performance, safety and long life. And, for true economy, they use Wickwire's WISSCOLAY® *Preformed*. It lasts longer — is easier to cut, splice and install. It's kink-resistant and safer to handle. Wickwire Distributors and Rope Engineers, in key cities everywhere, are prepared to render prompt service in meeting your wire rope needs. Wickwire Rope Sales Office and Plant — Palmer, Mass.

IN THE EAST—Wickwire Spencer Steel Div. of C. F. &I.
500 Fifth Ave., New York 18, N. Y.
IN THE ROCKIES—The Colorado Fuel and Iron Corp.
Continental Oil Bldg., Denver, Colo.
ON THE WEST COAST—The California Wire Cloth Corp.
1080—19th Ave., Oakland 6, Cal.

Azusa Rock & Sand Co. Cuts Costs with "*A-1*" Jaw Crusher

CALLED ONE OF THE most efficient crushing plants in the country," Azusa Rock & Sand Co. of California installed this 42x32 in. "*A-1*" jaw crusher to break gravel boulders, some as large as 30 inches. Feed runs 100 to 200 TPH; sometimes as high as 250 TPH.

Heavy-going demands like this have been everyday routine, six days a week, for this Allis-Chalmers machine since 1946. Yet, the original main bearings are still going strong. Operation has been practically trouble-free. Only jaw plates and toggle bearings have been replaced.

MANPOWER ECONOMY

Convenient all-electric controls regulate feeder, crusher and belt conveyor to surge pile. All controls are sequence interlocked. Only one operator is needed.

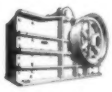
CHECK THESE "A-1" FEATURES

- No choking or packing in the "A-1" jaw crusher — crushing is uniformly distributed throughout the entire depth of the crushing chamber.
- Jaw opening nips biggest pieces with minimum slippage.
- Renewable parts protect expensive castings from wear, greatly prolong crusher life.
- Automatic lubrication of main pitman and swing jaw bearings.

Find out more about "*A-1*" *jaw* crushers and other Allis-Chalmers crushers from the A-C representative in your area. Or write for **Bulletin 07B6369A.** Allis-Chalmers offices or distributors are in principal cities in the U.S.A. and throughout the world.

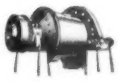
A-2817

Kilns, Coolers, Dryers



Jaw Crushers

Hoists



Mills

Gyratory Crushers

Vibrating Screens

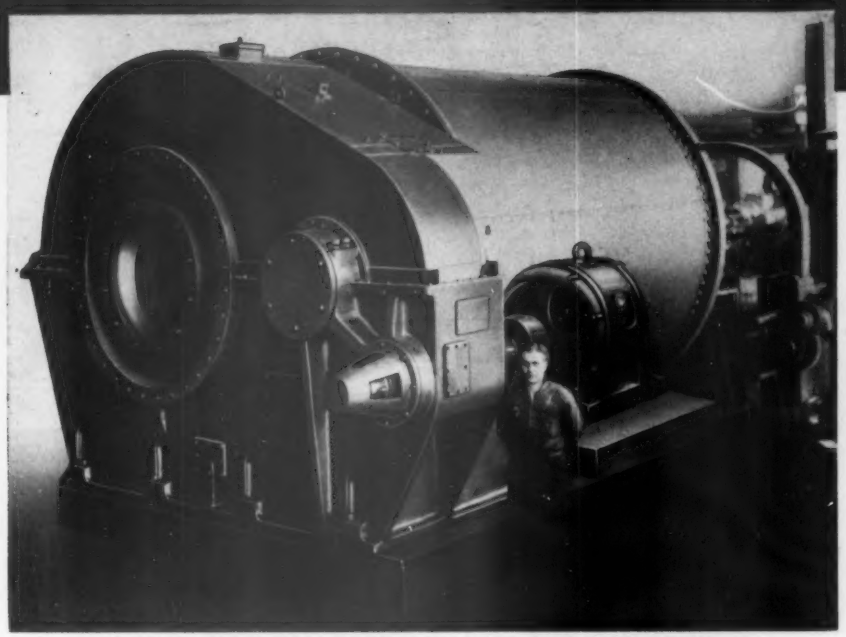
AND OTHER EQUIPMENT FOR THE CRUSHING, CEMENT AND MINING INDUSTRIES

ALLIS-CHALMERS, 974A SO. 70 ST.
MILWAUKEE, WIS.

"*A-1*" is an Allis-Chalmers trademark.

ALLIS-CHALMERS

IT COSTS *LESS* TO OWN THE BEST!



KENNEDY INTEGRAL GEAR DRIVE AIR SWEPT TUBE MILL . . .

BUILT-IN FEATURES OF KVS BALL MILLS

Integral Gear Drive connected directly to driving shaft

•

Shaft carried in roller bearings. Cannot be misaligned or set wrong

•

All Gears and Bearings automatically oil sprayed

•

Requires less power to drive

•

Mesh sizes readily adjusted

KVS Tube and Ball Mills are versatile. They can be used as a rod mill, tube mill for wet or dry grinding or for air sweeping. Built to LAST, they provide trouble-free service year-in, year-out.

Our records show that in 15 years no gears or pinions have ever worn out. Compare this service record with any other mill . . . judge for yourself the quality of materials and workmanship which goes into these fine machines.

Made in any length or diameter required according to YOUR needs and OUR rigid specifications. The experience of over fifty years is applied in building a mill that will provide maximum service at continued low operating cost.

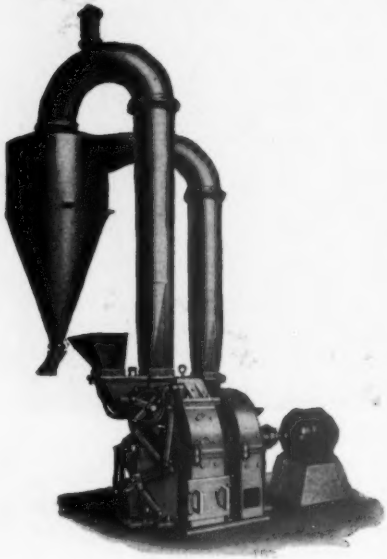
Replace your obsolete equipment with mills that will quickly pay for themselves out of increased earning capacity. Long life assures liberal dividends from the investment and, when you specify KVS equipment "It Costs Less To Own The Best."

Send for bulletin describing, fully, all types of KVS mills

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

TWO PARK AVENUE, NEW YORK 16, N. Y.

THE "TRIPLE"



Because it is so readily adaptable for such a wide range of uses, the Raymond Imp Mill is often regarded as the most versatile Mill in the entire pulverizing field.

The Raymond Imp Mill has a proven record of economy. It grinds, dries, and classifies materials in one continuous, dustless operation. The entire process is automatic, from feed hopper to finish bin and close control is assured over the finished product.

Raymond Imp Mills are extensively used throughout the nonmetallics industry for handling clays, diatomaceous earth, fullers earth, and similar products.

They are available in the several basic types illustrated, and in a wide range of sizes to meet almost every capacity requirement.

RAYMOND IMP MILL

STANDARD EQUIPMENT

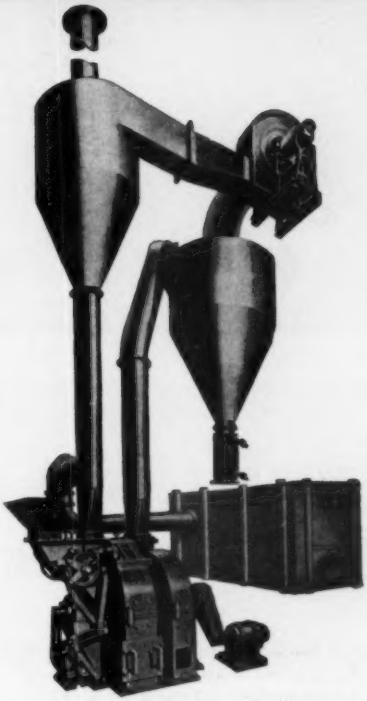
Widely used in operations where products are ground to medium finenesses. The standard Imp Mill can be used in closed circuit with a Mechanical Air Seperator where high fineness and close uniformity of finished product are required.

COMBUSTION

RAYMOND PULVERIZER DIVISION

1321 North Branch Street, Chicago 22, Illinois

THREAT" MILL



RAYMOND IMP MILL
WHIZZER-EQUIPPED

Provides a wide range of fineness control from 20 mesh to practically all passing 325 mesh. Different finenesses are easily and quickly obtained by means of one simple adjustment.

RAYMOND IMP MILL
WITH FLASH DRYING

This system comprises an economical and efficient method for drying and grinding materials in a single continuous operation. The Raymond Imp Mill can handle products containing large percentages of initial moisture, since high inlet temperatures can be used.

CLASSIFYING

For further details, write for Raymond Imp Mill Catalog No. 55

ENGINEERING SUPER-HEATER, INC.

Western Office: San Fernando Bldg., Los Angeles 13
Eastern Office: 200 Madison Avenue, New York 16

ROADSIDE REPORT *by H. Petrey of Arlington, Texas. Ford Model F-8 shown has a G.T.W. rating of 39,000 lbs. as a tractor. G.V.W. rating is 21,500 lbs.*

"My FORD moves this equipment 10 miles faster than 5 other makes I tried!"

"RECENTLY I purchased a Ford F-8 to haul a 50,000 lb. crane from job to job," reports H. Petrey of Arlington, Texas. "I must say this 145-horsepower Ford F-8 is the King of them all. It moves this equipment 10 miles faster and safer than the 5 different trucks of other makes that I have tried, to date. I am real proud of this BIG JOB."

In terms of *Payload-Performance* the Ford BIG JOBS have no equal in their class. No other truck offers so much payload capacity in relation to chassis weight with as high a horsepower rating per gross ton. This means bigger payloads within legal load limits. It means faster, more profitable delivery of big loads. Ford's high *Payload-Performance* is evidence of Bonus Built construction. Each of over 150 Ford Truck models is Bonus Built... built extra strong to last longer.

*BONUS: *"Something given in addition to what is usual or strictly due"—Webster*

FORD 1949 Bonus* Built TRUCKS 1959

BUILT STRONGER TO LAST LONGER

USING LATEST REGISTRATION DATA ON 6,106,000 TRUCKS, LIFE INSURANCE EXPERTS PROVE FORD TRUCKS LAST LONGER!

ONLY THE FORD BIG JOB HAS ALL THESE FEATURES

- ★ New 145-h.p. Ford V-8 engine for top performance.
- ★ Ford concentric dual-throat carburetor for more power, more economy.
- ★ Big Ford power-operated hydraulic brakes; front 16-inch by 2¼-inch; rear 15-inch by 5-inch double cylinder on F-7, 16-inch by 5-inch double cylinder on F-8. Air brakes also available for F-8.
- ★ New heavy duty 5-speed transmissions—overdrive or direct-in-fifth—for operating flexibility.
- ★ Ford Super Quadrax single speed axles; two-speed axle available in Model F-8.
- ★ Large diameter (10-inch) wheel bolt circle with 8 studs to allow for extra-strong hub construction.
- ★ Million Dollar Cab with Ford Level Action suspension for greater driving comfort.
- ★ Nationwide service from over 6,400 Ford Dealers.
- ★ Ford Bonus Built construction for long truck life.

Gross Vehicle Weight Ratings: F-8 up to 21,500 lbs., F-7 up to 19,000 lbs. Gross Combination ratings: F-8 up to 39,000 lbs., F-7 up to 35,000 lbs.

"Here's one case where wire rope care paid off big!"

"Usually when I show up on the job, I hear all the 'gripes' about wire rope but today it was different. This contractor got rid of the bugaboo of early rope breakage and saved himself thousands of dollars. He was feeling so good, he even slipped me a cigar.

"He's done everything in his power to minimize wear and breakage of wire rope by keeping the condition of his equipment right up to 'snuff'. And he's got the best bunch of shovel runners you ever saw. They certainly know how to handle these machines without abusing the rope.

"But that's not all. Last year they switched to Tiger Brand Excellay Preformed Ropes and they've been getting better service than ever before. You can see that with 25 trucks on the job, any work stoppage—even for half a day—would cost them real 'dough'."

How proper wire rope application saves you money

There is always one best type of wire rope for every application and the Tiger Brand Wire Rope Specialist can help you select the right ropes for your particular needs. He'll check your equipment, keep you posted on proper rope care, and a dozen other things to assure long service life at low unit cost.

To help you maintain these operating standards, we have prepared a booklet entitled, "Valuable Facts about the use and care of Wire Rope." Every key man on your operating staff should be supplied with this much needed information. Send the handy coupon for your copy.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

SEND FOR NEW FREE BOOKLET

American Steel & Wire Co.
Rockefeller Bldg., Dept. H-11
Cleveland 13, Ohio

Gentlemen:

Please send me a copy of your booklet, "Valuable Facts about the use and care of Wire Rope."

Name.....

Company.....

Position.....

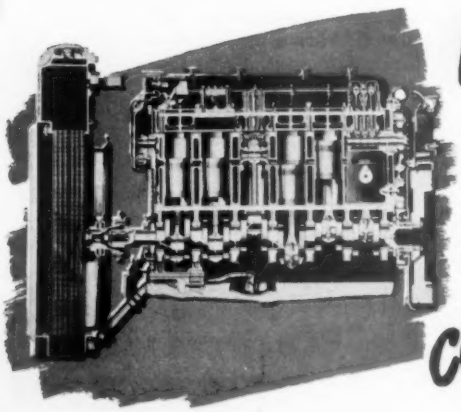
Address.....

City..... State.....

UNITED STATES STEEL

Do Your PISTON
...LOOK LIKE THIS?

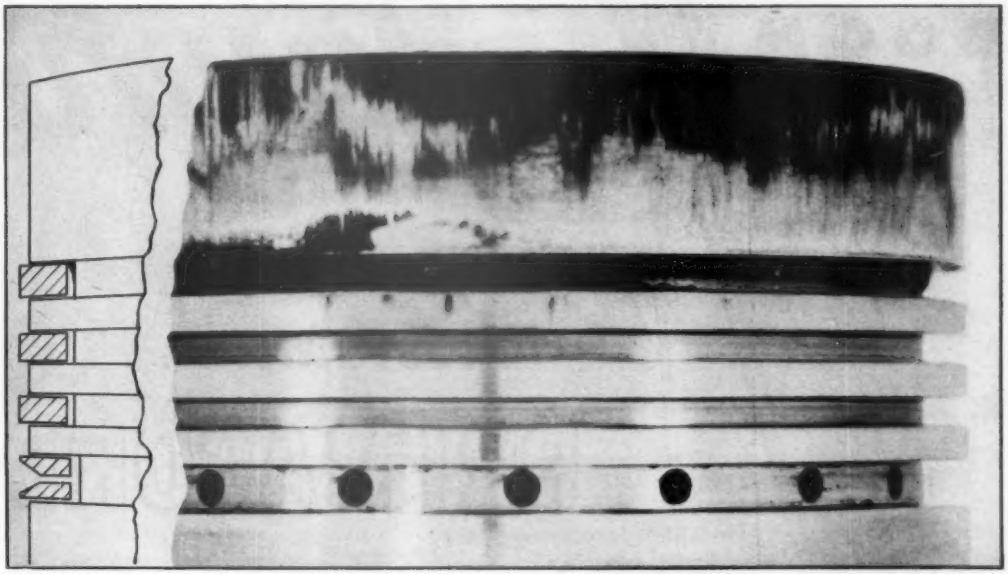
WITH REGULAR HEAVY DUTY OIL—This photo of an actual piston shows a typical example of what happens to piston ring grooves under **SEVERE DUTY** service when regular Heavy Duty 2-104B motor oil is used. The drawing helps to clarify the condition shown in the unretouched photograph. Note the heavy deposits that coat all surfaces.



NEW SINCLAIR SUPER TENOL CUTS MAINTENANCE COSTS IN SEVERE DUTY SERVICE

RING GROOVES

...OR LIKE THIS?



WITH NEW SUPER TENOL—This unretouched photo and drawing show how new Sinclair SUPER TENOL, in the same type of SEVERE DUTY service, cleaned out all but a small portion of the deposits shown at left. SUPER TENOL also quickly relieves valve sticking conditions, safely removes accumulated sludge and varnish deposits.

New, Sinclair SUPER TENOL has been specially developed to eliminate the high maintenance costs so frequently encountered in both types of SEVERE DUTY service:—1. High temperature, high speed, overload; and 2. Low temperature, light load, long idle, stop-and-go.

If you operate diesel-powered or gasoline equipment in either type of SEVERE DUTY service it will pay you to begin using new SUPER TENOL now—to keep equipment in operation many more days each year, to save time, labor and money.

SINCLAIR

HEAVY DUTY LUBRICANTS

Your Nearest Supplier of Sinclair Products Will Gladly Arrange Lubrication Counsel or You May Write to

SINCLAIR REFINING COMPANY, 630 FIFTH AVENUE, NEW YORK 20, N. Y.

BOOM Down

ON PRODUCTION COSTS WITH . . .

PRIMACORD

YOU'RE taking a big bite out of digging costs when you blast with Primacord. Because Primacord hook-ups help produce the kind of well-broken rock that makes digging easier. And better digging speeds operations all along the line.

Primacord makes this possible through a combination of forces that work as a hard-hitting team. You plan trunk lines so that front row holes shoot a split-second before succeeding rows. You load down hole lines so that the Primacord contacts every cartridge. When you fire, every cartridge in the load explodes at full power.

A non-conductor of electricity, Primacord is insensitive to stray currents . . . hooks up with simple square knots and half hitches . . . is wound on light weight spools in three grades to meet every blasting condition. Ask your supplier which grade you should use; or write direct to The Ensign-Bickford Company, Simsbury, Connecticut. P-25

PRIMACORD-BICKFORD

Detonating • Fuse •

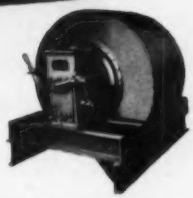
Also Ensign-Bickford Safety Fuse Since 1836

You Can Cut Today's High Production Costs with

STURTEVANT EQUIPMENT

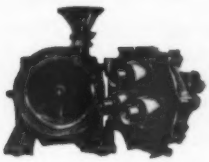
AIR SEPARATOR

For separation of fines to 325 mesh and finer. Increases output from 25% to 300% . . . lowers power costs by 50%. For years, this separator has been the standard in the cement industry.



DUSTLESS BLENDER

Four-way mixing action assures a thoroughly blended product. Open-door accessibility permits easy cleaning. Available in many mixing capacities for ¼ ton per hour and up.

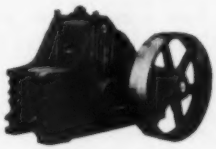


RING-ROLL MILLS

For medium and fine reduction (10 to 200 mesh), hard or soft materials. Very durable, small power. Operate in closed circuit with Screen or Air Separator. Open-door accessibility. Many sizes. No scrapers, plows, pushers, or shields.

SWING-SLEDGE MILLS

For coarse and medium reduction (1" to 20 mesh). Open-door accessibility. Soft, moderately hard, tough or fibrous substances. Built in several types and many sizes.



JAW CRUSHERS

For coarse, intermediate and fine reduction of hard or soft substances. Heavy or light duty. Cam and Roller action. Special crushers for Ferro-alloys. Several types, many sizes.

Sturtevant equipment, such as illustrated, helps you overcome high labor and production costs by increasing output. In addition, their rugged construction assures long life with minimum maintenance. It will pay you to investigate these machines. Write for information.

STURTEVANT MILL COMPANY
104-A CLAYTON STREET, BOSTON 24, MASSACHUSETTS

Designers and Manufacturers of: CRUSHERS • GRINDERS • SEPARATORS
CONVEYORS • MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS

MAIL COUPON TODAY!

STURTEVANT MILL COMPANY
104-A Clayton Street, Boston 24, Mass.

Gentlemen:
Please send me your catalog. I am especially interested in _____

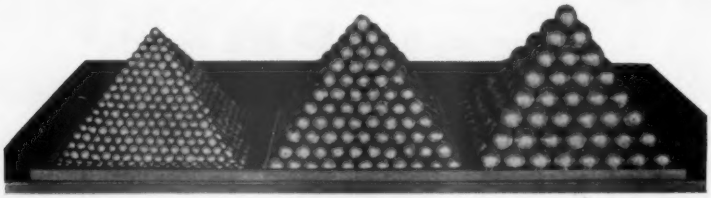
Name _____

Street _____

City & State _____

IT COSTS LESS TO OWN THE BEST!

GRINDING COSTS CAN BE CUT AS MUCH AS 50%



XX HERCULITE STEEL GRINDING BALLS

The hardest, toughest substance known

WILL HELP YOU DO IT!

KVS CHEMISTS HAVE DEVELOPED A SPECIAL ALLOY — far superior to ordinary metals — that produces absolutely uniform quality grinding balls that last longer.

MADE OF XX HERCULITE STEEL these balls have a hardness of approximately 600 Brinell outside and 583 inside which eliminates the high percentage of breakage common in ordinary chilled or forged steel types which are only hard outside with soft centers, and XX Herculite Steel Balls retain their original round shape. Here's a new and improved product that saves time and dollars.

THE PRICE IS LOW TOO: KVS engineers designed and built a new, special type machine to mould these balls which replaces the obsolete, costly hand molding method. Our scientific, mass production process makes it possible to furnish a superior product at a price no higher than you now pay for less efficient balls. They are available, promptly, in 1¼", 2" and 3" sizes, in carload lots, or less.

USED IN CONJUNCTION WITH THE KVS AIR SWEPT TUBE MILL, tests show that maintenance costs with bituminous coal hold costs to 2c per ton. Coal can be pulverized to a degree where it burns like gasoline. Here's proof that "It Costs Less To Own The Best." A KVS engineer will quickly demonstrate how the use of these XX Herculite Balls will cut YOUR grinding costs as much as 50%.

EVERY PRODUCER OF AGGREGATES is interested in reducing costs. We have figures available that will convince you immediately that by replacing old-style balls in your mill with KVS XX Herculite Steel Balls, you can increase your grinding efficiency and decrease your ratio of maintenance.

Send for prices, terms and full information regarding this new, money-saving grinding media. Our bulletin gives full details.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

TWO PARK AVENUE, NEW YORK 16, N. Y.

WITH ALL THEIR EXTRA VALUE...

DODGE

"Job-Rated" TRUCKS are priced with the lowest!

It's what you get for what you pay that counts!

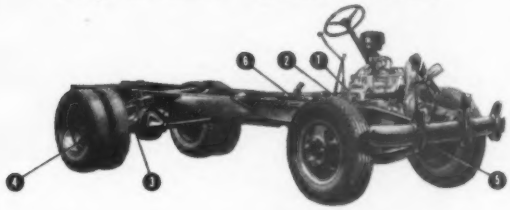
Read, on this page, why Dodge "*Job-Rated*" trucks offer you *extra* value.

Then, see your Dodge dealer. Ask him to quote you the price of the Dodge "*Job-Rated*" truck that fits your hauling or delivery job.

You'll get more for your money . . . in performance, in economy, in long-lasting truck satisfaction.

See your Dodge dealer *now*.

Dodge "Job-Rated" Chassis Features



1. SUPER-FRICTION CLUTCHES. Large frictional areas. "*Job-Rated*" for smooth action and long life.

2. RUGGED 3-, 4- or 5-SPEED SYNCHRO-SHIFT TRANSMISSIONS —"*Job-Rated*" for the load. Carburized gears; heat-treated shafts; antifriction bearings throughout.

3. FULL-FLOATING REAR AXLES . . . Hypoid design; banjo-type housing . . . "*Job-Rated*" for the load. Long life . . . low upkeep cost.

4. CYCLEBONDED BRAKE LININGS (no rivets) prolong brake life.

5. CROSS-TYPE STEERING . . . Sharp turning angle; easier handling, and parking.

6. SAFETY-LOCATED GAS TANKS . . . Outside the cab, NOT inside!

• • •

NEW STEERING COLUMN GEARSHIFT . . . Standard equipment on ½-, ¾- and 1-ton models with 3-speed transmissions . . . provides easier handling, more unobstructed floor space, greater safety of operation.

"RIGHT-SPOT" HAND BRAKE . . . under the center of the cowl . . . right where you want it. Standard on all ½-, ¾- and 1-ton models. Provides unobstructed floor space; easier passage through either cab door.

Dodge "Job-Rated" Engine Features!

• **FAMOUS DODGE L-HEAD TRUCK ENGINES . . .** "Job-Rated" for your loads; save gas, oil.

• **COMPLETELY SPLASH- AND DUST-PROOF ELECTRICAL SYSTEM . . .** with high-output generator. Resistor-type spark plugs, and high-output coil, insure amazingly smooth engine operation; longer plug life.

• **EXHAUST VALVE SEAT INSERTS . . .** resist wear and pitting. Reduce valve grinding; preserve performance.

• **REPLACEABLE PREFITTED MAIN BEARINGS . . .** precision, long-life quality. Reduce maintenance costs.

• **FULL-PRESSURE LUBRICATION . . .** positive pressure to main, connecting rod and camshaft bearings and camshaft drive, prolongs engine life.

• **FULL-LENGTH CYLINDER COOLING . . . 4-RING ALUMINUM ALLOY PISTONS . . . OIL-BATH AIR CLEANER** and many other money-saving features!

For the good of your business . . .
switch to DODGE "Job-Rated" TRUCKS

these 3 Simple Steps

WRITE FOR our illustrated Bulletin 5112 which contains details of the construction, capacity, application and, especially, the efficient crushing principle of Traylor TY Reduction Crushers. Ask for Bulletin 114 on Traylor Feeders, too.

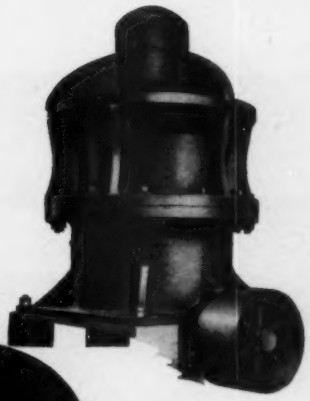
READ THEM both carefully. Study the features that make Traylor crushers and feeders the equipment you want because they are built for maximum efficiency and, therefore truly profitable operation.

SEND US the information outlined on page 7 of the Crusher Bulletin and receive concise, explicit, expert recommendations for your individual operation.

Can Increase Your Crushing Profits . . . by Reducing Production Costs

A "TRAYLOR" LEADS TO GREATER PROFITS

This Quarter section Cut-away Reveals Many of the Major Features of the Traylor TY Reduction Crushers . . .



(1) Quickly adjustable suspension.

(2) Spider and upper shell cast integral.

(3) Efficient Traylor bell head and curved concaves.

(4) Traylor's positive dust seal.

(5) Extra-short, extra-heavy main shaft with full length eccentric and eccentric bushing.

(6) Cut steel gears and self-contained countershaft bearing fitted with roller bearings.

(7) Dust-tight, oil-tight chamber containing the oil reservoir, lubricant cooling system and the heart of the fully automatic, positive force-feed lubrication system.

Full description of these features are in Bulletin 512

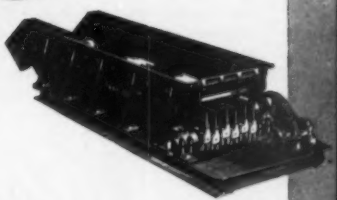
TRAYLOR

REDUCTION CRUSHERS · FEEDERS

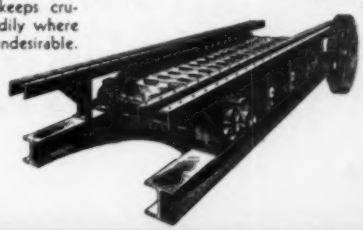
JAW CRUSHERS · GYRATORY CRUSHERS
ROTARY KILNS · COOLERS · DRYERS
GRINDING MILLS · CRUSHING ROLLS

EVEN FEED GETS THE MOST FROM ANY CRUSHER

This husky TRAYLOR GRIZZLEY FEEDER scalps fines from the feed, carries only oversize to the crusher.



The dependable TRAYLOR APRON FEEDER keeps crushers working steadily where sifting through is undesirable.

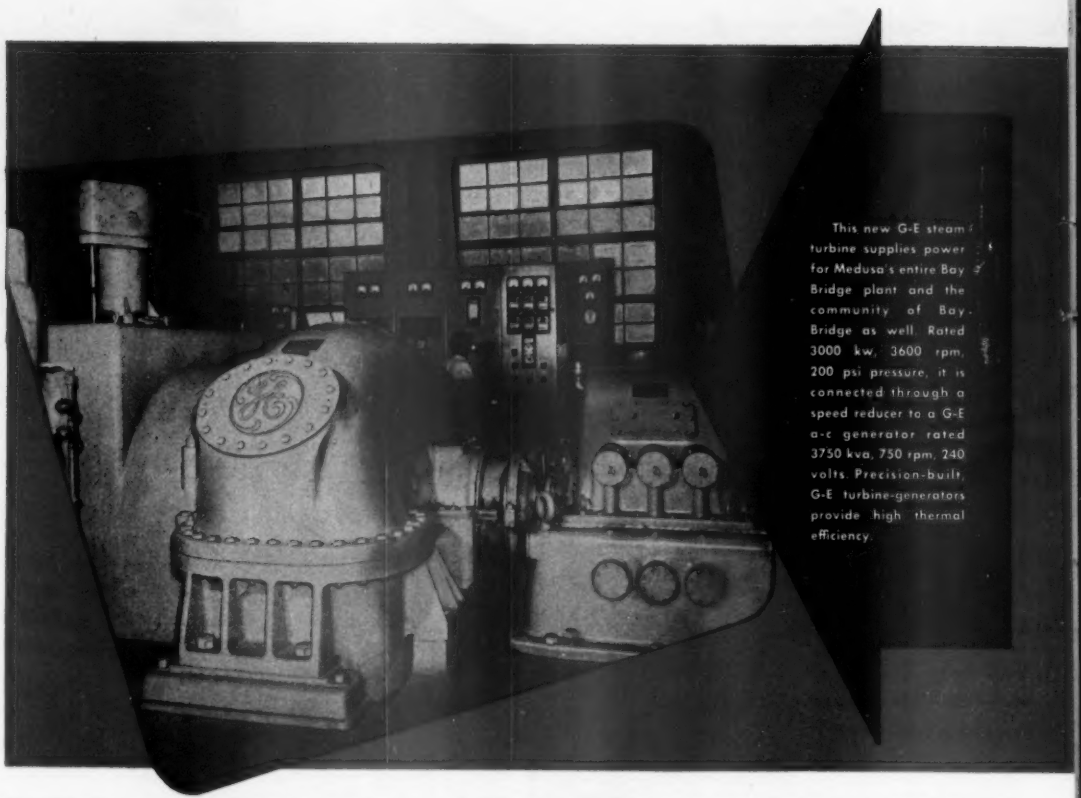


TRAYLOR ENGINEERING & MANUFACTURING CO.

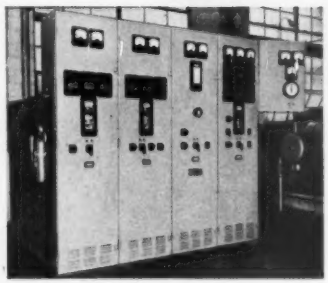
263 Mill Street, Allentown, Pa.

Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P. Q.

Sales Offices: New York, N.Y., Chicago, Ill., Los Angeles, Calif.

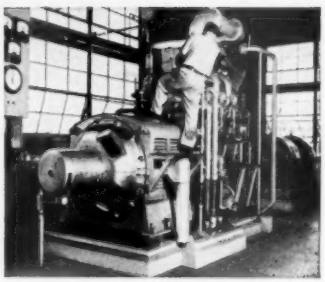


This new G-E steam turbine supplies power for Medusa's entire Bay Bridge plant and the community of Bay Bridge as well. Rated 3000 kw, 3600 rpm, 200 psi pressure, it is connected through a speed reducer to a G-E a-c generator rated 3750 kva, 750 rpm, 240 volts. Precision-built, G-E turbine-generators provide high thermal efficiency.



2 For the power distribution system, the plant uses this G-E 2400-volt Type MI-6 Metal-Clad switchgear, a co-ordinated, easily-installed unit, completely metal-enclosed for personnel safety. G-E Metal-Clad switchgear, in a wide range of ratings, contains incoming line and feeder breakers that insure adequate interrupting capacity.

3 This 7-panel G-E Limitamp high-voltage motor control line-up controls five 200-hp motors in the dry-grind tube mills and two 300-hp motors for the pulverizers. Elsewhere, a 750-kva G-E unit substation steps down 2400-volt power to 480 volts for small motor and lighting use. G-E unit substations minimize voltage drop.



4 For emergencies, additional standby capacity is provided by two 375-kva diesel engine-driven G-E generators (one shown), each with a 5-kw exciter. Use of many thousand feet of G-E interlocked armor cable throughout the plant for power and control leads eliminated the need for costly conduit installations.

You can put your confidence in—

GENERAL ELECTRIC

658-2

MEDUSA INSTALLS NEW POWER PLANT—CUTS FUEL COST!

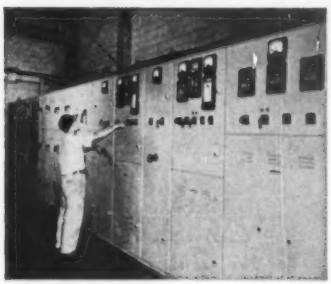
General Electric Turbine-Generator at Bay Bridge mill utilizes waste-heat steam more efficiently—eliminates coal-firing of two boilers—supplies power for five kilns and all other plant equipment on waste heat alone!

To reduce excessive operating and maintenance costs, the Medusa Portland Cement Company recently replaced the power generating system at its Bay Bridge, Ohio, plant with a completely new "packaged" General Electric system, including a turbine-generator and allied equipment.

Previously, four kilns and attendant equipment were powered by the old turbine using steam delivered by four boilers, two using waste heat and two coal-fired. Now, with the installation of the more efficient G-E turbine equipment, the entire plant operates on power generated from waste heat alone. Coal-fired boilers are eliminated, fuel costs are reduced!

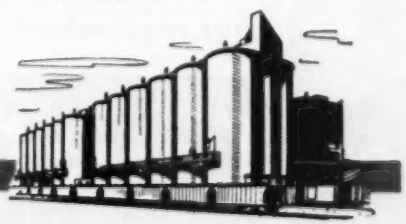
Complete with co-ordinated G-E equipment for power distribution and control, the Medusa installation is another example of how well a G-E "packaged" electrical system pays off.

You, too, can cut operating and maintenance costs all along the line by consulting an experienced G-E engineer on your electrical problems. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*



5 Another G-E switchgear unit combined with Cabinetrol® is used in conjunction with two standby generators as well as a bank of 1500-kva transformers. Combining simplicity and convenience, Cabinetrol centralizes in one location the control of a number of 15 to 50-hp motors that are used in the plant in crushing and grinding operations.

Now is the time—when you are in the planning stage for plant improvement—to call in a G-E specialist in cement mill electrification.



THE 3/4-YARD LORAIN IS HERE...

Thew TL-25 Lorain

• Users asked for it! Here it is! Now, a big-producing ¾-yd. Lorain TL-25 that gives you more of everything for your money! More output—with the big-producing ¾-yd. dipper! More weight—and greater crane capacities. This new addition to the Lorain line brings you the most modern machine of its class...with more features for high production and long life. Here are 16 *plus* values in the new Lorain TL-25... (1) INTERCHANGEABLE MAJOR COMPONENTS (2) 5 IDENTICAL SHOE CLUTCHES (3) ANTI-FRICTION BEARINGS (4) OIL-ENCLOSED CUT GEARS (5) INTERCHANGEABLE PARTS (6) A ONE-PIECE TURNTABLE BED (7) HOOK ROLLERS (8) STANDARD AND WIDE GAUGE CRAWLERS (9) EXTRA-LONG CRAWLERS FOR DRAGLINES (10) TWO CRAWLER SPEEDS (11) DROP FORGED TREADS (12) POSITIVE TRAVEL LOCK (13) "FULL CIRCLE" STEERING (14) POSITIVE INDEPENDENT SHOVEL CROWD (15) ALL-PURPOSE CRANE BOOM (16) GOOSENECK HOE BOOM.

Plan now to equip your next job with the stand-out ¾-yd. Lorain TL-25...Your nearby Thew-Lorain Distributor will give you all the details!

THE THEW SHOVEL CO., LORAIN, OHIO

MORE FOR YOUR $ IN A LORAIN

A NEW ½-YD. LORAIN

Thew TL-15 Lorain

For The Smaller Jobs

The new TL-15 rounds out the "TL" series. It's a lighter ½-yd. version of the TL-25—with shorter tail swing and narrower crawler mounting—yet gives you the outstanding plus values of the TL-25. Here's the best ½-yd. buy for your money.

Get the New Lorain TL-25 and TL-15 story from your Thew-Lorain Distributor.

THEW · Lorain ®

Thew TL-25 Lorain

SHOVELS · CRANES
DRAGLINES · HOES
CLAMSHELLS

Price of the standard DW10 Tractor, with cab, is $11,335; W10 Wagon, $4950, f.o.b. Peoria, Illinois, subject to change without notice.

EVER TRY "FLOATING" BIG LOADS?

WORKING for Gifford Hill & Co. near Texarkana, Texas, four "Caterpillar" DW10 Tractors and W10 Wagons equipped with big low-pressure tires virtually "float" 14 heaped yard loads of sand and gravel over loose sand, mud and humps. Then, out on the 'dozer-built haul road in high gear, these powerful outfits travel fast—making three and a half round trips per hour on long hauls between pit and plant. Working 9-hour days these four units keep the crushing and screening plant humming to produce over 950 carloads a month.

Highlights of the DW10-W10 units are:

1 High-grade "Caterpillar" construction for sturdiness and long life.
2 "Caterpillar" Diesel power for dependability and adequate rim pull.
3 Big-tire flotation for loose soils.
4 Booster steering and air brakes for operator safety.
5 Big capacity—14 heaped cubic yards of raw or finished material.

Why not give *your* pit and crusher operations the dependable power, economical operation and big work capacity of all-"Caterpillar" equipment? With it go the further advantages of dealing with one manufacturer and one dealer service organization widely regarded as the most complete and efficient of its kind in the world. See your "Caterpillar" dealer. Meantime, use the coupon.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

CATERPILLAR
REG. U. S. PAT. OFF.

DIESEL ENGINES • TRACTORS MOTOR GRADERS EARTHMOVING EQUIPMENT

CATERPILLAR TRACTOR CO.
Dept. PQ-11, Peoria, Ill.

Send your latest booklet, "Cutting Quarry Costs."

Name_____

Address_____

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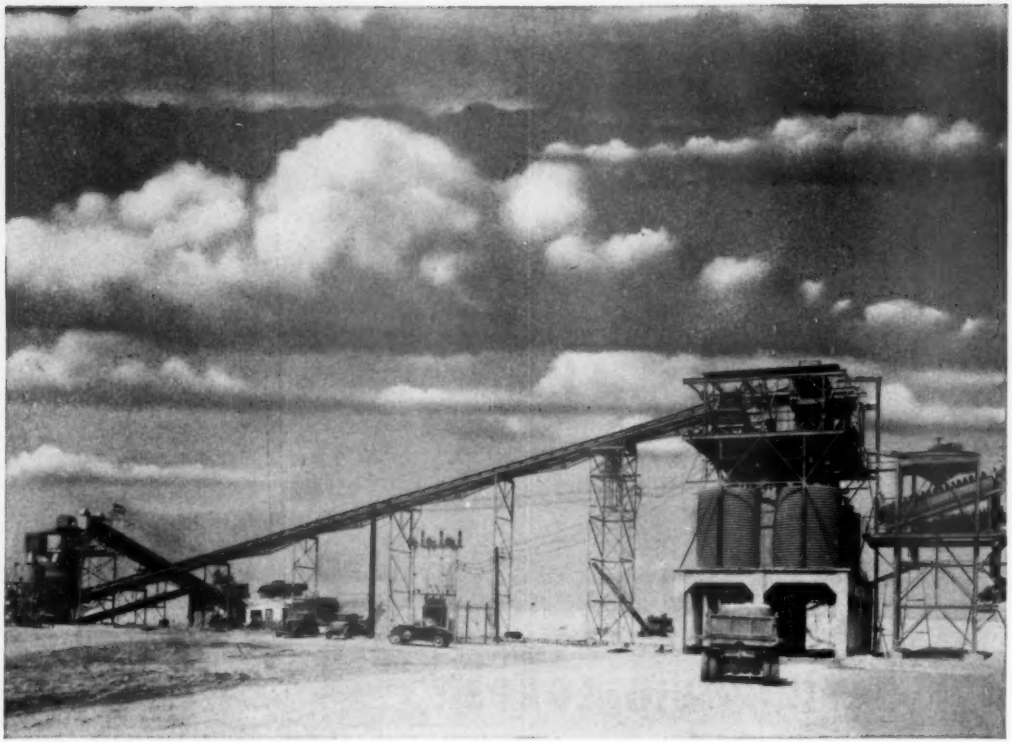


Geared for Growth

Here is a sand and gravel plant designed by S-A engineers which allows for easy expansion and possible layout revision for production of different grades of rock products. S-A engineers designed and equipped this plant for quick, easy growth.

Designing and installing such systems for handling and processing bulk materials has been the everyday work of S-A engineers for nearly fifty years. Each S-A built handling system is the result of years of experience with bulk conveying problems plus the best in conveying equipment. Whether you plan to replace units or install a complete new handling system, ask first for the recommendations of S-A engineers. Write us today . . . no obligation.

TRIANGLE ROCK & GRAVEL CO.
SAN BERNARDINO, CALIF.

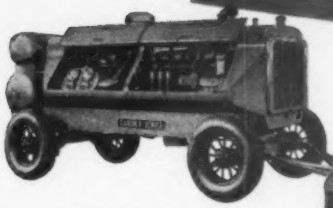
All control switches for the conveyors and screens are located on a roomy, elevated platform from which one operator can control practically the entire operation of the plant. Duplicate sets of belt conveyors are arranged to give the plant a conveying capacity close to 600 tons per hour. This plant rates high in convenient arrangement and ability to deliver large tonnages at low cost.

STEPHEN S-A DAMSON
MFG. CO.

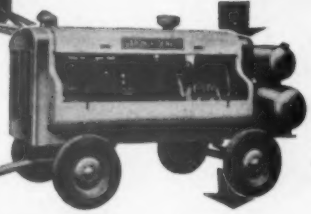
20 Ridgeway Avenue, Aurora, Illinois — Los Angeles, Calif. • Belleville, Ontario

DESIGNERS AND MANUFACTURERS OF ALL TYPES OF BULK MATERIALS HANDLING EQUIPMENT

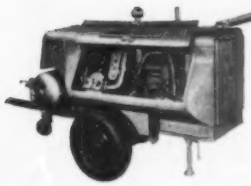
AN ALWAYS DEPENDABLE AIR SUPPLY . . .



Gardner-Denver WBK-500
Portable Compressor



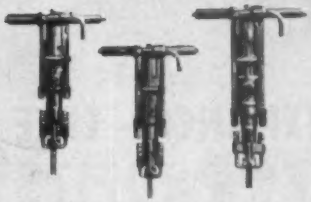
Gardner-Denver WHF-210
Portable Compressor



Gardner-Denver WHD-105
Portable Compressor

No matter where you send a Gardner-Denver Portable Compressor, you can be sure of a steady, uninterrupted air supply. For regardless of climate or altitude, the complete water jacketing of all cylinders "weather-conditions" them against over-heating — and from cold, unlubricated starts in sub-zero weather. For complete information, write Gardner-Denver Company.

. . . FOR THE RIGHT AIR TOOLS



There's a Gardner-Denver Sinker that's "correct" in size and power for every type of ground. Shown here are the three most popular models: the high-speed S45 for secondary drilling or medium rock—the S55, most popular 55-pound sinker on the market—the S73, 67 pounds of speed and power for deep holes or the hardest formations.

The feed of the new Gardner-Denver URM99 Wagon Drill is powered by a five-cylinder radial air motor. Designed for speedy, six-foot steel changes; carries a 3½ in. or 4 in. bore derrick drill. Your operator will like the ease of control.

The Gardner-Denver T23 Backfill Tamper is balanced for easy "walking" over the fill — has valve and exhaust that won't "freeze" in cold, damp weather — contains integral oil reservoir that assures complete lubrication.

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Gardner-Denver Company, Quincy, Illinois

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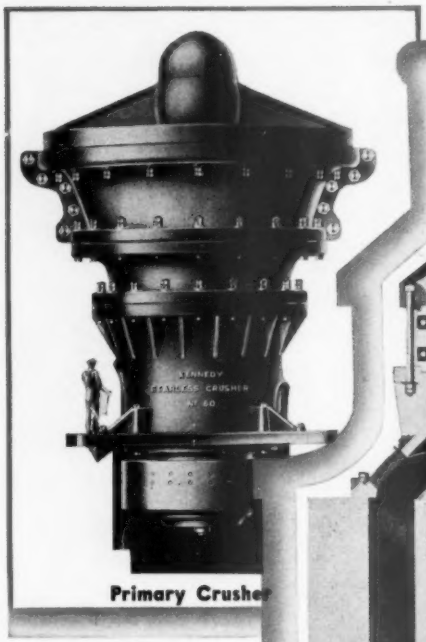
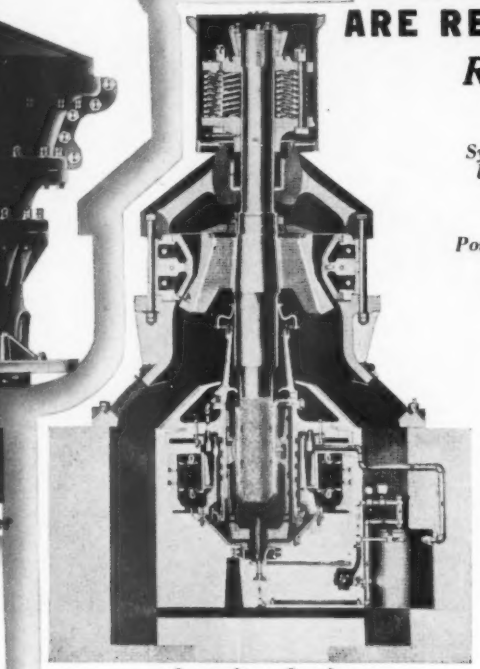


Primary Crusher



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Vol. 42 NOVEMBER 1949 No. 5

PIT AND QUARRY

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PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

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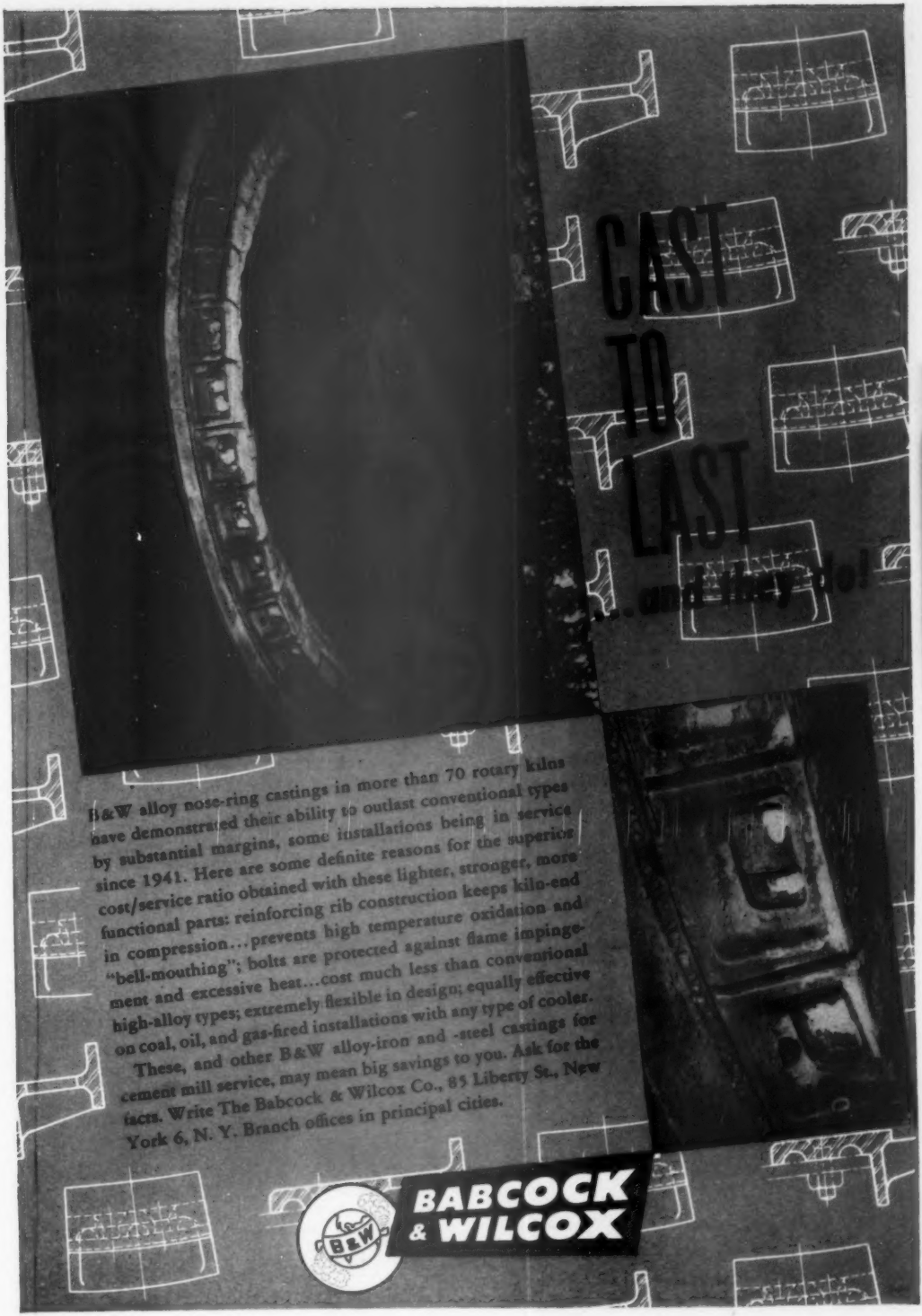

B&W alloy nose-ring castings in more than 70 rotary kilns have demonstrated their ability to outlast conventional types by substantial margins, some installations being in service since 1941. Here are some definite reasons for the superior cost/service ratio obtained with these lighter, stronger, more functional parts: reinforcing rib construction keeps kiln-end in compression... prevents high temperature oxidation and "bell-mouthing"; bolts are protected against flame impingement and excessive heat...cost much less than conventional high-alloy types; extremely flexible in design; equally effective on coal, oil, and gas-fired installations with any type of cooler.

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BABCOCK & WILCOX

editorial

No Percentage Depletion

AS many of our readers already know, especially those who are members of the various trade associations, efforts to obtain percentage depletion for all the nonmetallic minerals industries during the session of Congress just ended have failed. Reportedly due to increased Treasury opposition to the amendment to Bill H.R. 5268, the joint Conference Committee of the House and Senate first reduced the original 15 percent percentage depletion allowance to 5 percent and then dropped the amendment entirely. The Committee was convinced that if the bill retained the amendment it faced a certain Presidential veto, so, to save the bill, which contained many items of importance to the conferees, the amendment was eliminated.

The history of percentage depletion is rather confused, and there is much difference of opinion over the meaning of certain terms in the pertinent provisions of Section 114(b)4 of the Internal Revenue Code which covers this subject. As nearly as can be determined, however, the fundamental purpose of the allowance as depletion is to return to the owner, tax free, that part of his capital investment in the mineral reserve in the ground used up by production. In 1926 percentage depletion of 27½ percent of gross income was established for oil and gas. In 1932 similar provisions were made allowing 5 percent for coal, 15 percent for metal mines, and 23 percent for sulphur. In 1942 percentage depletion of 15 percent of gross income was allowed for fluorspar, ball and sagger clay, and rock asphalt. Later the same rate was applied to flake graphite, vermiculite, beryl, feldspar, mica, talc, lepidolite, spodumene, barite, thenardite, potash, bauxite, phosphate rock, bentonite, and gilsonite.

SINCE then various other nonmetallic minerals industries have worked to obtain similar benefits. The present effort came nearest to being successful and it officially came to light when on September 16 the Senate passed an amendment to revenue bill No. H.R. 5268 which, if concurred in by the House of Representatives and signed by the President, would extend percentage depletion to all nonmetallic clays and minerals. The House failed to concur in the Senate changes and both houses appointed members to a joint Conference Committee which would consider H.R. 5268 in its entirety, with the results already described.

What percentage depletion would have meant for the nonmetallic minerals industries was described by the counsel for a leading trade association as follows:

"If the amendment is enacted, producers . . . will be entitled to percentage depletion in each taxable year after December 31, 1948. The allowance for depletion will be 15 percent of the gross income from mining the property during the taxable year. Rents or royalties on the property are excluded from gross income. Ordinarily, each mine constitutes a separate property but in some instances several mines may constitute 'the property' for purposes of depletion if they are mined as one property.

"The allowance for percentage depletion cannot exceed 50 percent of the net income from the property, computed without allowance for depletion. In other words, if the gross income from mining a property is $100,000, the allowance for percentage depletion will be $15,000 if the net income from the property exceeds $30,000. If, for example, the net income is $20,000, the allowance for percentage depletion will be $10,000 instead of $15,000.

"Producers . . . will no longer be entitled to depletion based on discovery value. They will, however, be entitled to cost depletion if cost depletion is higher than percentage depletion."

While efforts to obtain percentage depletion have failed for the present, we do not feel that they were entirely wasted. Congress next year will consider general revenue legislation and efforts then can be renewed with probably better prospects of success. Producers can help by advising their congressmen of the importance of percentage depletion to them and to their communities. Actually Congress is only being asked to remove an inequality in the law which accords percentage depletion to certain nonmetallic minerals industries while denying it to others.

Trade Associations

THE U. S. Chamber of Commerce recently made a survey of 500 trade associations which indicated that they form a very important part of American economic life. Listed were 68 principal activities or services of such groups, some of the more important of which follow:

"Holding meetings, conferences, and conventions for discussion of problems of the industry, trade and association.

"Training within the industry—to develop a higher degree of skill in those engaged in production, distribution, management, etc.

"Publishing pamphlets and bulletins and giving demonstrations and lectures for the purpose of giving consumers information about the products and services of the industry.

"Public relations—This includes all efforts to build up a sympathetic understanding and helpful public attitude toward the industry.

"Cooperative advertising to promote and stimulate interest in the products in which members of the association are interested.

"Establishment of business standards and codes of trade practices so that the public and an industry itself may be protected against unfair competitive methods.

"Gathering and publishing industry statistics so that both the public and the industry may have the widest possible knowledge of prevailing conditions.

"Research of various kinds. Services under this heading include scientific research and economic research."

Walter E. Trauffer

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ASSURE better compressor performance with the Texaco air compressor oils made to meet your operating conditions.

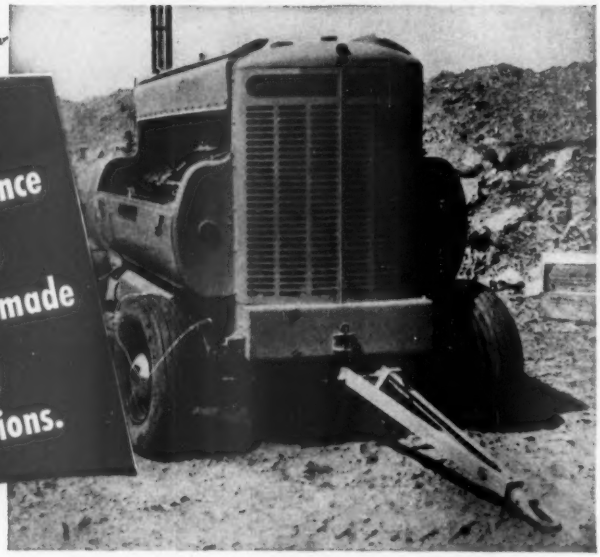


Photo Courtesy Joy Mfg. Co., Sullivan Division

No guesswork when you lubricate with Texaco air compressor oils. There is a complete line of them so that, *regardless of your operating conditions,* you can be sure of clean valves, free rings, open ports and clear air lines. Here's the set-up —

For regular service, Texaco straight mineral oils.
For water conditions, Texaco compounded oils.
For rust prevention, Texaco rust-inhibited oils.
For severe service and elimination of carbon and gum troubles, Texaco heavy-duty oils.

All are designed to give you greater operating efficiency . . . prolong compressor life . . . reduce your maintenance costs.

To be sure of getting the right lubricants for your compressors, let a Texaco Lubrication Engineer help you select them. Just call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

LONGER LIFE FOR OPEN GEARS

Lubricate open gears with Texaco Crater X Fluid. It goes on as a liquid, then quickly forms a tough, long-lasting film that absorbs noise, shock and wear. Gears last much longer, with this economical protection, easily applied by brushing, spraying or pouring.

TEXACO

TEXACO Lubricants and Fuels
FOR ALL CONTRACTORS' EQUIPMENT

Zonolite Forms Branch In Sacramento — Headed By Wendel and Suzetti

Officials of the Zonolite Company of Chicago, manufacturers of insulation materials, have announced that Sacramento would become the headquarters for a newly-formed branch of the firm to be named The California Zonolite Co.

Although stating that the Sacramento branch will be the processing and distribution point for the entire state, company spokesmen said that plans were under way for the development of a factory in southern California.

The Zonolite organization purchased the facilities of the Universal Insulation Company at Sacramento from Glenn Suzetti. The Universal establishment will form the nucleus for the new branch. The volume of output from the present plant is expected to be doubled to produce 1,000,000 bags of insulation material per year on a 16-hr. day basis.

C. H. Wendel of Chicago, who was merchandising manager for the United States Gypsum Co., will be president of the California Zonolite Co. Mr. Suzetti will be vice-president, concentrating on experimentation with insulation and research on new materials.

1950 A.E.D. Meeting Plans Laid by H. J. Hush and Group

Registrations for the 31st annual meeting of Associated Equipment Distributors, scheduled for January 15-19, 1950, at the Stevens Hotel in Chicago, opened on October 15 for a two-week period. Attendance at the 1950 convention is expected to approach the record, 1600 members who thronged the A.E.D. meeting last year.

Harry J. Hush, Griffin Equipment Corporation, New York, is heading the convention committee. Other members of the group include the following: S. J. Oechsle, Metalweld, Inc., Philadelphia; F. J. Fitzpatrick, Parker-Danner Co., Hyde Park, Mass.; and S. F. Laskey, Northwest Equipment Inc., Fargo, N. D.

The Rust Engineering Company, Pittsburgh, Pa., has been commissioned to build a reinforced concrete chimney 328 ft. high for Mt. Isa Mines, Ltd., Queensland, Australia.

Coming Events

November 9-11, 1949 — Tampa, Fla. Industrial Minerals Division, American Institute of Mining and Metallurgical Engineers.

November 28- December 3, 1949 —New York. 22nd Exposition, Chemical Industries, Grand Central Palace.

November 29-30, 1949 — Cincinnati. Annual meeting, National Slag Association, Netherlands Plaza Hotel.

January 15-19, 1950 — Chicago. 31st annual meeting, Associated Equipment Distributors, Stevens Hotel.

January 18, 19, 1950—Washington. Fifth annual convention, National Agricultural Limestone Association, Inc., Hotel Statler.

January 23-27, 1950 — Chicago. 34th annual convention and exhibit, National Sand and Gravel Association, Stevens Hotel.

January 23-27, 1950 — Chicago. 20th annual convention and exhibit, National Ready Mixed Concrete Association, Stevens Hotel.

January 30- February 1, 1950 — Chicago. 33rd annual convention, National Crushed Stone Association and Manufacturers Division Exposition, Stevens Hotel.

February 1-3, 1950—Chicago. 5th annual convention, Agricultural Limestone Institute, Stevens Hotel.

February 6-9, 1950—Chicago. 30th annual meeting, National Concrete Masonry Association, Hotel Sherman.

February 12-16, 1950—New York. Annual meeting, American Institute of Mining and Metallurgical Engineers, Statler Hotel.

March 6-9, 1950—Cincinnati. 47th annual meeting, American Road Builders' Association, Netherlands Plaza Hotel.

State Highway Allocations From Federal Fund Announced for 1951

Sums apportioned to the states from the $450,000,000 fund authorized by the Federal-aid Highway Act of 1948 for the fiscal year 1951 for improvements on federal-aid primary, secondary and urban routes have been announced by Secretary of Commerce Charles Sawyer. Normally the apportionment would not be made until December, but it was made early to initiate urgently needed improvements.

The Act authorized an appropriation of $450,000,000 for each of the fiscal years 1950 and 1951 to assist the states in continuing the post-war highway program for which initial appropriations were made under authorization of the Federal-aid Highway Act of 1944. The apportionment was made according to formulas stated in the Act of 1944.

Under provisions of the 1948 Act, as in the previous Act, 45 percent of the total authorization must be expended for projects on primary roads in the federal-aid system (including urban extensions), 30 percent for the improvement of routes in the federal-aid secondary system, and 25 percent for work on federal-aid highways in urban areas having a population of 5000 or more. The states are required to match the federal funds.

The funds are to be administered by the Bureau of Public Roads of the U. S. Department of Commerce in cooperation with state highway departments, according to the usual federal-aid procedure. Under provision of the law all projects are initiated by state highway departments, which also prepare plans, let contracts and supervise construction, all subject to federal approval. The apportionment for the fiscal year 1951 became available on October 1 and will remain available until June 3, 1953.

The formal apportionment states that the sum apportioned to any state shall be subject to such reduction, if any, as the Secretary of Commerce may find is required by reason of diversion of road-user revenues (gasoline taxes, registration fees, etc.) in violation of Section 12 of the Hayden-Cartwright Act of 1934. The purpose of this provision was to prevent any increase above the 1934 rate of assignment of road-user revenues to non-highway purposes.

Sand and Gravel in 1948 Show Increase in Volume And Value Over 1947

The production of sand and gravel in 1948, as reported to the U. S. Bureau of Mines, totaled 318,735,000 short tons, valued at $252,944,000. These figures show an increase of 11 percent in quantity and 17 percent in value over the 287,659,000 tons, valued at $216,869,000, reported in 1947. Approximately 73 percent of the total production was supplied by commercial plants and 27 percent by federal, state, county, and municipal governments.

California was the largest producer, and Michigan, Wisconsin, Illinois, New York, Ohio, Texas, Minnesota and Pennsylvania followed in that order. These nine states each with an output of more than 12,000,000 tons, accounted for 51 percent of the total production.

Sales of sand and gravel by commercial producers in 1948 amounted to 232,972,272 short tons—an increase of 10 percent over the 212,562,417 tons produced in 1947.

Sales of sand for building, paving, railroad ballast, and other uses increased in 1948. Sales of all other types of sand decreased. Without exception, sales of gravel by this class of producer increased in 1948.

Glass sand—Sales of glass sand totaled 4,542,260 short tons, with an average value of $2.37 per ton, a decrease of about 15 percent from production in 1947. Leading producing states in the order named were Illinois, West Virginia, Pennsylvania and Missouri.

Molding sand—The output of molding sand was 8,265,451 short tons—a decrease of approximately 1 percent from 1947 totals. The average value was $1.56 per ton—up 12 cents over 1947. Michigan, New Jersey, Illinois, and Ohio were leading producers.

Grinding and polishing (including blast sand)—Sales of this sand decreased 12 percent and totaled 969,031 tons at an average value of $1.96 per ton. Leading producers were Pennsylvania, Michigan, Illinois and Missouri.

Fire or furnace sand—Production decreased 14 percent in 1948—amounting to 322,576 short tons. Average value was $1.53 per ton. States leading in production were Indiana, Ohio, Pennsylvania and Illinois.

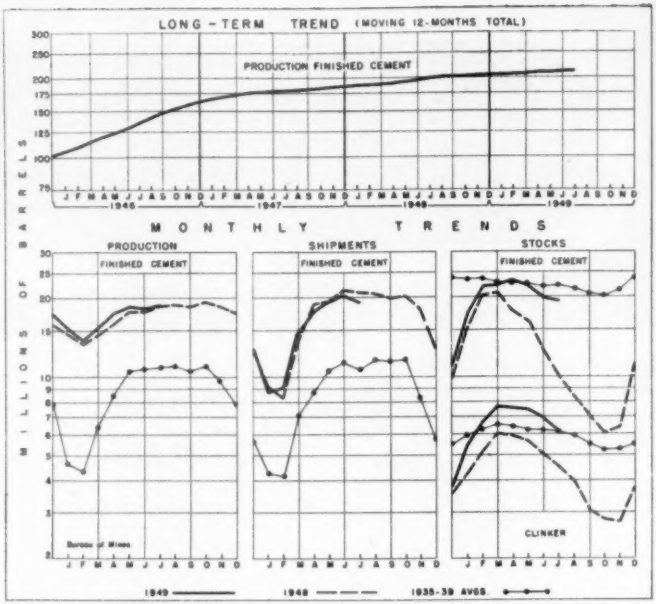
Engine sand—The output of engine sand in 1948 declined 9 percent and totaled 2,445,454 short tons, average $1.00 per ton. Pennsylvania, West Virginia, Indiana, and Virginia were chief producing states.

Filter sand—There was a decrease of 25 percent in the production of filter sand in 1948. Totals were 158,269 short tons, valued at $382,600. Average value was $2.42 per ton. Leading producers were New York, New Jersey, California and Pennsylvania.

Preparation—Washed, screened or otherwise prepared sand and gravel comprised 91 percent (212,072,878 short tons) of the total commercial production. The average value was 95 cents per ton, as compared with 54 cents for unprepared material.

Transportation—Ninety-six percent (223,195,711 short tons) of the total commercial production was covered by figures indicating methods of transportation. Of this total output, 56 percent was moved by truck, 35 percent by rail and 9 percent by waterway.

The production of sand and gravel from noncommercial or government-and-contractor operations in 1948 accounted for 27 percent of the total tonnage; the figure was 26 percent in 1947. The value of this tonnage in 1948 represents 16 percent of the total value for sand and gravel produced by the industry. States reported 53 percent of the total, counties 38, municipalities 2, and other agencies 7. Twenty-four percent of the total was classified as prepared, with an average value of $1.02 per ton. Unprepared material was valued at 31 cents; in 1947 it was 36 cents.



SUMMARY—The portland cement industry produced 18,856,000 barrels of finished cement in July, 1949, as reported to the U. S. Bureau of Mines. This figure is an increase of less than one percent over the output in July, 1948. Mill shipments amounted to 19,320,000 barrels—a decrease of 8 percent, as compared with July, 1948, figures, while stocks of 19,320,000 barrels on July 31 were 90 percent above the July, 1948, total. Clinker output in July, 1949, amounted to 18,230,000 barrels, a decrease of less than one percent, as compared with the figure for the corresponding month of the previous year.

PRODUCTION—The output of 18,856,000 barrels of finished cement in July, 1949, came from 147 plants located in 35 states and Puerto Rico. In the same month of 1948, 18,721,000 barrels were produced from 146 plants. Clinker production declined slightly, as compared with the July, 1948, figure.

SHIPMENTS—Mill shipments of 19,320,000 barrels decreased 8 percent, as compared with July, 1948, totals. The demand for cement, as indicated by mill shipments, decreased, as compared with that of the previous month (June, 1949)—20,667,000 barrels. Shipments were greater in 6 districts and lower in 13 than those reported in July, 1948. The changes range from a decrease of 27 percent in the western Pennsylvania and West Virginia district to an increase of 19 percent in the Colorado, Wyoming, Montana, Utah, and Idaho district. An increase of 10 percent was recorded in the Puerto Rican district for July, 1949.

STOCKS—Stocks of 19,320,000 barrels of finished cement on July 31 were 90 percent above the July, 1948, figure, while clinker stocks, as of the same date, amounted to 6,210,000 barrels—an increase of 38 percent.

Tayler Offers Bids on Gear To Equip Overseas Plants

Theron C. Tayler, of the Tayler Engineering Service, 2100 Industrial Bank Bldg., Detroit 26, Mich., has announced that he is preparing plans and specifications for a group of overseas plants.

Mr. Tayler is taking bids on equipment for transit-mix concrete, stone quarrying, lime, and liquid and solid carbon dioxide plants. Among the items are trucks, truck mixers, bags, baggers, cranes, shovels, diesel engine generator plants, etc.

Paul T. Phillips and C. F. Robertson, partners in the firm of the Howard County Crushed Stone Company, have announced the opening of their $125,000 crushing plant at Kokomo, Ind. Capacity of the plant is 200 t.p.h., and the main products are agricultural limestone and crushed stone.

A. C. Cronkrite Celebrates 50 Years in Service Of Universal Atlas

A. C. Cronkrite, vice-president in charge of Central Region sales at Chicago for the Universal Atlas Cement Company, U. S. Steel subsidiary, celebrated his fiftieth anniversary with the corporation on October 4, 1949.

Starting in 1899 as office boy with the American Steel and Wire Company, another U. S. Steel subsidiary in Chicago, Mr. Cronkrite was successively invoice clerk and cost accountant with this company until 1907, when he joined the Universal Atlas organization. He served as salesman assigned to the western Wisconsin territory until 1915, when he was appointed Chicago metropolitan sales manager. In 1928, he was advanced to assistant general sales manager at Chicago, and nine years later in 1937 was elected to his present post.

Mr. Cronkrite's half-century business career spans most of the significant era during which the portland cement industry was developed in this country, headed by the colorful John W. (Bet-A-Million) Gates. Because his superiors at the American Steel and Wire Company considered him too youthful to become a salesman, he transferred to the newly-formed cement company subsidiary. He joined Universal Atlas as one of a pioneer group of cement men known in the company's annals as the "class of 1907," destined to contribute much to the growth of both the company and the industry.

Mr. Cronkrite is active in civic affairs in Chicago, has served as general secretary and director of the Chicago Association of Commerce and Industry, and is a director of the Chicago Building

Congress, the Rotary Club and the Economic Club of Chicago. He is a member of the American Road Builders' Association and the Illinois Manufacturers' Association and has served in various capacities for the American Red Cross and the Community Fund of Chicago.

Longview-Saginaw Lime Works Becomes Longview Lime Corp.

The following announcement was recently issued by the Longview Lime Corporation of Birmingham, Ala.:

"Longview Lime has been a tradition nearly a century with particular merchants, builders and processors. When Longview bought Saginaw Lime Works, we combined the names, but Longview continued to predominate. . . .

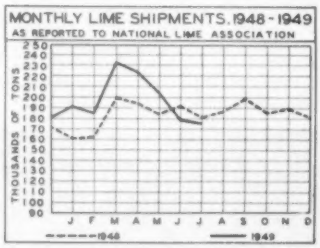
"With our facilities still further enlarged and modernized, we can no longer resist the popular demand that we drop Saginaw and have Longview only speak for Longview Lime. Therefore, as of this date, our name officially is changed as shown below—Longview Lime Corporation."

Ownership, management and capital structure of the firm remain unchanged.

DuPont Issues New Edition Of Blasters' Handbook

Recently off the press is a new reference book, *Blasters' Handbook*, published by DuPont. The volume is the first edition of the Handbook to appear in 8 years. A partial list of chapter headings is as follows: Dynamite, Blasting Agents, Ventilation Aids, Primers and Priming, Firing Blasts, Cuts and Rounds, Shafts and Tunnels, Quarries and Open Pits, Strippings, Precautions After Blasting, Information Tables, etc.

This edition supersedes all earlier editions, being completely revised and copiously illustrated. The book also includes new statistics and a check list of safety measures. 470 pages. Price, $1.50 per copy.



According to data collected by the National Lime Association, 51 companies in July, 1949, shipped 175,586 tons of lime (107,121 quicklime; 68,465 hydrate). Reporting companies represent 59.9 percent of the association members' total capacity of record. Based on Pit and Quarry's estimate for the remainder of the industry, the total shipments for the month by all plants were approximately 322,400 tons. Shipments by uses and grades for July, 1949, were:

	Quicklime (tons)	Hydrate (tons)
Agricultural	1,335	7,760
Building	14,233	36,248
Chemical	91,553	24,457
Total	107,121	68,465

Gains in Private Building And Engineering Awards Reverse Trend in August

Contracts awarded for building and engineering works by private owners in the 37 states east of the Rocky Mountains turned upward in August to reverse the trend of earlier months of the year, it was reported by F. W. Dodge Corporation.

Investment commitments by private interests for building and engineering projects in August amounted to $589,339,000 in the 37 states, to show a gain of 11 percent over July and 2 percent over August a year ago. The principal private investment increases were in residential and engineering projects.

Investment commitments for residential building in the Eastern states in August amounted to $393,434,000. This total was 16 percent higher than in July and 17 percent higher than in August last year. Public residential awards increased 6 percent over July and 92 percent over August a year ago, while private residential volume showed a gain of 17 percent over July and 12 percent over August last year.

The cumulative total of residential awards, public and private, in the first eight months was $2,358,826,000, or 6 percent less than in the corresponding period of last year, despite an increase in public residential volume from $84,039,000 to $246,544,000. Private awards declined 13 percent in the eight months. Apartment house construction increased 12 percent, single-family houses built to owners' orders were down 1 percent, and single-family houses built by operative builders for sale or rent declined 15 percent in the eight-month period.

Nonresidential contracts let in August amounted to $278,031,000, an over-all decline of 21 percent from July and 10 percent from August of last year. Nonresidential award by governmental agencies showed a loss of 34 percent from July and a gain of 13 percent over August of last year, while private nonresidential volume declined 11 and 19 percent from the corresponding months. On a cumulative basis covering the first eight months, nonresidential awards were down 7 percent, with public ownership awards up 20 percent and private nonresidential contract volume down 19 percent.

Heavy engineering awards in August amounted to $234,283,000, to show a decline of 7 percent from July and an increase of 13 percent over August of last year. The decline from July was attributable to a 20 percent drop in public-ownership engineering awards.

During the first eight months of this year, heavy engineering awards in the 37 states totaled $1,585,665,000, to show a gain of 5 percent over the corresponding period of last year.

Large deposits of limestone have been located in Chandigarh, the site of the future capital of East Punjab. These are estimated at over 12 million tons. A mill producing 700 tons of cement daily will take 35 years to exhaust the deposits.

W. R. Cliffe of L.I.M.E. Suffers Fatal Injuries In Tractor Accident

The editorial staff of PIT AND QUARRY announces with a deep sense of personal loss the death on September 22 of W. Raleigh Cliffe, consulting engineer, Lime Industry Management and Engineering, Hershey, Pa. A tractor he was operating on his farm near Annville, Pa., turned over, killing him instantly. The industries with which he was associated can ill afford to lose a man who contributed so much to their progress.

Mr. Cliffe was born in Philadelphia in 1895, and was educated at Germantown Academy and the University of Pennsylvania. He left the latter institution at the beginning of World War I and served with distinction in the French army.

Upon his return from France in 1919 he became associated with the Keystone State Construction Company of Philadelphia.

In 1923 he was engaged in construction work for The Warner Company of Philadelphia. He became actively associated with the lime industry when he was placed in charge of The Warner Company's Southern Division in 1924.

He became general superintendent for The Warner Company late in 1924, with headquarters at Bellefonte, and continued in this capacity until 1935, when he resigned to become vice-president in charge of construction and operation for the Chemical Lime Company, Bellefonte, Pa., during its reorganization.

From 1936-1943, Mr. Cliffe was associated with the H. E. Millard Lime and Stone Company and in 1943 he resigned his position to devote his entire time to his consulting engineering business, which under the name of L.I.M.E., was expanding rapidly.

In recent years Mr. Cliffe and his growing organization have acted as consulting engineers for a number of pulp mills and cement plants as well as continuing an active interest and participation in the lime industry. The most recent large project completed under his direction was that of a lime recovery plant for the Department of Water and Sewers, Miami, Florida, which was fully described in an earlier issue.

W. Raleigh Cliffe

In addition to his work in the United States and Canada, Mr. Cliffe's activities extended to the British Isles, Europe, India, Central America and the West Indies. He had recently returned from an extended trip through Europe. He was the holder of a number of patents related to the production of lime and contributed regularly to PIT AND QUARRY and other trade journals.

Stanton Walker Honored At Dinner Arranged By California Associations

Southern Californians paid signal honor to Stanton Walker, director of engineering of the National Sand & Gravel Association and the National Ready Mixed Concrete Association on the evening of October 14 in Los Angeles. The tribute was in the form of a dinner at the Biltmore Hotel, attended by about 175 persons. They included aggregates and ready-mixed concrete producers of the area, together with their administrative and operating executives, and numerous guests.

The affair, which was preceded by a cocktail hour, was arranged by the Southern California Rock Products Association and the Southern California Ready Mixed Concrete Association to coincide with Mr. Walker's recent visit to the Pacific Coast, where he had gone primarily to participate in the national gathering of the American Society for Testing Materials, held in San Francisco.

Presiding at the event was Robert F. Mitchell, head of the Consolidated Rock Products Company, Los Angeles, a past-president of the National Sand & Gravel Assn. Except for a brief talk by Mr. Walker there was little speech-making, and the gathering was a most enjoyable one.

Mr. Walker's talk traced the development of the research activities of the two associations, whose programs he has directed for more than a quarter of a century. He told of the growth of their laboratory facilities, the scope of the work undertaken, and the cooperation which has been accorded other technical organizations. Studies in durability continue, as always, to occupy the major role in the programs, he declared. The annual conventions of the two national associations, to be held January 23-27, 1950, at the Stevens Hotel in Chicago will be accompanied by the largest machinery and equipment show ever staged at these meetings, Mr. Walker reported, all available exhibit space having been allotted months ago. He strongly urged those present to attend the event, if at all possible, to inspect the array of modern equipment, to hear a top-notch program of speaking talent, and to participate in the discussions.

Among the guests at the Los Angeles affair were officials of the U. S. Army Engineers, the California Highway Dept., Los Angeles County, the cities of Los Angeles, Long Beach and Pasadena, various testing laboratories, and representatives of the portland cement and asphalt industries.

General Crushed Stone Sells Winchester Plant To New Concern

On September 1, 1949, the Winchester, Mass., plant of the General Crushed Stone Company of Easton, Pa., passed from that company's hands and became the property of a new firm, the Winchester Crushed Stone Company. Harold Brownson is president of the new firm. The announcement was released by O. E. Benson, General Crushed Stone vice-president and general manager.

The Winchester facilities were acquired by General in 1919. Prior to that time the quarry had been operated by the Winchester Rock and Brick Company for 27 years. They include, in addition to crushing equipment, a "hot mix" plant for road surfacing material.

Appropriations Are Passed For Flood Wall at Rosiclare

At Rosiclare, Ill., the construction of a flood wall, a long-sought goal of fluorspar mining companies, to protect their holdings against the ravages of Ohio River, appears to be assured in the foreseeable future.

A $500,000 congressional appropriation, contained in the Army's Civil Functions Bill, was passed by the House on March 29 and by the Senate on May 24. Moreover, the Illinois legislature recently appropriated $97,000 for the same purpose; the bill is now awaiting Governor Stevenson's signature.

Alcoa Fluorspar Division Buys Property in Kentucky

Walter Skeels, works manager of the Alcoa Mining Company's fluorspar division at Rosiclare, Ill., has announced that his firm has purchased the Blue-and-Marble fluorspar property in Livingston County, Ky., comprising 50 acres.

There are two usable shafts on the tract, but immediate development is not planned by Alcoa.

Gravel Plant Operated By Spry One-Man Crew

A 79-year-old youngster named Max Cazin, who runs a one-man gravel plant near King City in Metz-Monterey County, Calif., states that the only outlay he has had for help in three years was from carpenters who helped him build his bunker.

Mr. Cazin has a gravel lease on 68½ acres, about 25 acres of which is sand and gravel to a depth of 100 feet. His bunker is on the Chalone Creek, which is dry three or four years at a time. He sells 3000 to 4000 cubic yards of gravel a year, as it comes from the creek bed, to farmers, contractors, and concrete products men who drive in and furnish their own transportation. About 75 percent of the material goes into concrete.

Recently Mr. Cazin sank a 40-ft. well, assisted by his son. With equipment he built, he or his son will soon begin to wash the gravel.

For 8½ years Mr. Cazin was with Pacific Coast Aggregates, Inc., as superintendent of the Pleasanton, Calif. plant. He also relieved superintendents at other

Max Cazin

plants. At one time he was superintendent of the gravel plant at the Pardee Dam, constructed to serve the Oakland water system.

Quebec Smelting-Refining Plans 25-Ton Pilot Mill On Phosphate Property

R. P. Mills, president of Quebec Smelting and Refining, Ltd., has announced that the phosphate property of the concern at Buckingham, Que., Canada, is to be equipped with a 25-ton pilot mill. It was established by a series of 26 diamond drill holes that the rock averages 35 percent phosphate.

According to present plans, after 1,000,000 tons have been indicated by the exploration program, production will be increased to 1,000 tons daily to recover more than 300 tons of phosphate.

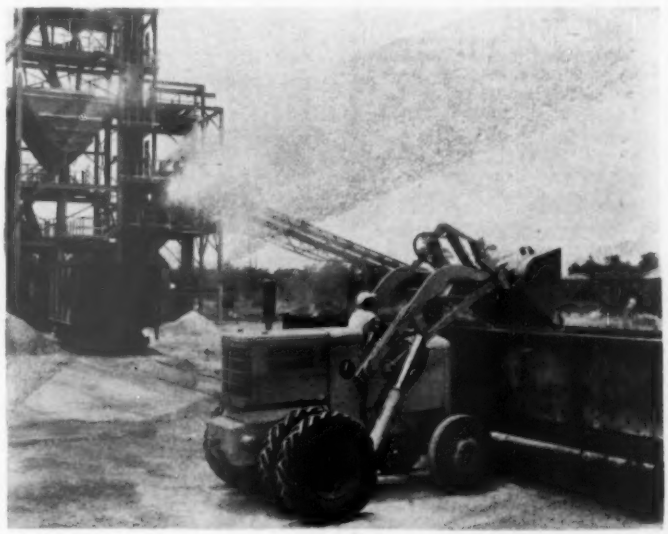
Estimated output at Buckingham will provide about one-third of Canada's phosphate requirements. Up to the present, approximately 300,000 tons of phosphate have been imported from the United States annually. Dr. J. H. Morgan is consulting engineer for the operation.

Shareholders of the Jefferson Lake Sulphur Company, Inc., recently voted approval of the merger of that company into the Jefferson Lake Sulphur Company, a New Jersey corporation. It was stated that the merger is expected to be effected as of January, 1950.

Florida Crushed Stone Uses Mechanized Handling System

The Hough "Payloader" shown in the accompanying illustration, operated by an International UD-9 diesel power unit, is proving a very handy materials-moving outfit for the Florida Crushed Stone Company at its plant near Tarpon Springs, being used to stockpile the various grades of crushed stone and load trucks and railroad cars.

The crushed material is made from slag from an electric furnace in a nearby phosphoric acid plant. Slag is brought to the crusher by hopper railroad cars and conveyed to the crusher by a belt system. Rotary crushers, both primary and secondary, break up the bulk slag into five commercial sizes from 1 inch down to No. 10 fine. The crusher plant is designed to crush 100 tons of the slag per hour.



• Scene at the Florida Crushed Stone Company's plant during loading operation.

New Concern Is Formed As Sinclair Closes Plant At Olmsted, Ill.

The Sinclair Refining Company has permantly closed its fuller's earth plant at Olmsted, Ill., which has been in operation for the last 26 years. Officials of the company explained that Sinclair no longer uses fuller's earth, because of a change in the process of manufacturing lubricating oil. Chemicals have replaced fullers earth in this process.

After the closing of the Sinclair plant, Floyd Cannon, who was for several years general manager, handling manufacturing and sales, established the Olmsted Clay Company, a division of the Diversey Corporation of Chicago, Ill. This new company sells fullers earth from Diversey's two plants, one at Paris, Tenn., and the other at Macon, Ga. Mr. Cannon is sales manager.

All grades of fullers earth are handled —granular for mineral oil refineries and for floor absorbent; 200-mesh for animal, vegetable and mineral refining; insecticide diluent; bonding clay; and grades for many other purposes.

Motive for Unscheduled Blast At Lewiston Pit a Mystery

Authorities at Lewistown, Ill., are baffled by the dynamiting of a gravel pit near that city on the night of September 22 which caused damage estimated at $50,000.

It was reported that approximately 40 sticks of dynamite were set off by long time fuses. The detonation destroyed a bulldozer and a dragline shovel. It also damaged a stone crusher and started a fire which destroyed the scale house, the office and all office records.

John Bradley, pit lessee, and Robert E. Flowers, owner of the equipment, which was not insured, stated that they knew of no one who would have set off the blast because of a desire to commit sabotage. No labor trouble has been experienced at the pit.

Lockhart Asbestos Concern Processes Fiber at Gibson

Chrysotile asbestos is being produced at a new plant on the deposit south of Gibson, Calif., by N. J. Lockhart and associates of La Moine.

The crude material is quarried, disintegrated in a hammer-mill at the plant, and the fibers are finally separated by an arrangement of compressed-air jets. The finished fibers, mostly of the short variety, are sold to tile and paper manufacturers.

According to the California Division of Mines, the prolonged strike which has tied up the Canadian asbestos industry has stimulated the search for new deposits in northern California.

Portland Producer Mining And Processing Limonite

Activity is reported in the limonite deposits near Scappoose, Ore., where James M. Orr, Portland industrial-minerals dealer, has opened a pit and processing plant.

The material is currently being shipped in quantity to British Columbia, where it is used to remove sulphur from manufactured gas.

About 700 tons of limonite was also shipped from the area recently to the C. K. Williams Company plant at Emeryville, Calif., for use as mineral pigment.

Facilities of the Manuel-Knoblock gravel deposit on the San Joaquin River at Herndon, Calif., were recently acquired by Stewart & Nuss, Inc., of Fresno. Acquisition of the property reportedly will give the buyers access to several million tons of high-grade material.

• The Federal Portland Cement Co., Inc., Buffalo, N. Y., employs this billboard near the entrance to its plant on the Lake Shore Road to point up that this is the home of Federal Portland Cement products. The billboard also stresses the slogan of the National Safety Council —"Two Good Rules—the Golden Rule, Safety." The sign gets attention from thousands of motorists on this busy traffic artery.

• Marquette Cement's director of operations, Frank Moyle, is shown congratulating team captain Howard Hendricks (left) and plant superintendent William Moyle (right) on the victory of Marquette's Nashville, Tenn., plant in the company's recent interplant bowling championship competition. The tournament is held annually in Chicago between teams from all Marquette plants.

Diversey Corp. Takes Over General Reduction Company

At Macon, Ga., the General Reduction Company has been reorganized and taken over by the Diversey Corporation of Chicago.

Under the new management the filtering clay plant will be modernized and fuller's earth production will be expanded. In addition, a research program is contemplated.

J. Slocum, son of General Reduction's founder, has been retained as plant manager. J. C. Glassner of the Diversey Corporation is president of the reorganized concern.

Cooperative Lime Plant Sold After 10 Years of Operation

At Luray, Va., the recent sale of the Page Co-operative Lime Association's plant to Theodore W. Mundy was confirmed in Circuit Court. The sale was made through J. E. Will and Roby Janney, receivers, in a friendly suit brought by the creditors.

The co-operative plant, said to have been the first of its kind in Virginia, was organized in 1937 by a group of farmers in order to obtain agstone for their farms. According to G. H. Clark, district farm agent, the plant was closed because it is too small to operate economically. During its 10 years of operation its promoters upped the use of agricultural limestone on farms from a few hundred tons to 12,000 tons annually.

Purchase of a 10-acre tract of land at Quincy, Ill., has been announced by the Marblehead Lime Company. The purchase price was said to be approximately $15,000. It was indicated by company officials that the land purchase is a part of an expansion program.

Perliters Converge On Colorado Springs

• Technical committee of the Perlite Institute: S. W. Johnson (Combined Metals Reduction Co.); Wharton Clay, executive secretary; Harry E. Lewis (Great Lakes Carbon Corp.), chairman; Kirk Hazelton (Cleveland Gypsum Co.); and Gordon Cain (Standard Perlite Corp.).

MORE than 100 persons representing perlite mining and processing interests in 20-odd states met in the Antlers Hotel in Colorado Springs September 7, 8 and 9 for the first formal meeting of the Perlite Institute. That the nation's perliters are solidly behind the newly-formed institute was eloquently attested to by the enthusiasm, attention, and hard work that characterized the business sessions of the three-day meeting.

Members of the technical committee, for example, worked straight through the opening day and into the night preparing their data for the members' approval. Their report constituted, in part, acceptable standards of perlite weight, limitations, aggregate sizes and mix ratios for use of perlite in plaster. These standards, which were agreed upon during the meeting, are being submitted to the American Standards Association for publication to the building trades, as well as to all members and non-members of the institute.

The business meeting was opened with an address by the institute's president, T. C. Carter, vice-president of Great Lakes Carbon Corporation of New York. In his talk, Mr. Carter stressed the importance of full cooperation on the part of every member in working with the institute for the purpose of furthering the advancement of the perlite industry.

Short extemporaneous talks by Guy N. Barnett, Plains PerAlex Company, Amarillo, Tex., and J. J. Brou, Precast Slab and Tile Company of St. Louis, provided pleasant unexpected highlights of the meeting.

Mr. Barnett, a plastering contractor, discussed some of the many plastering jobs that he has successfully handled with a perlite aggregate. Mr. Brou talked about his company's experience with perlite in the lightweight preformed concrete field.

Although long hours were spent at the business sessions ironing out problems confronting the institute, most of the perliters found some time to enjoy the scenic wonders around beautiful Colorado Springs. Social activities included a Western style chuck wagon dinner where the guests made short work of sizzling steaks broiled over a big campfire. Square dancing rated high on the off-hours activity list and reports indicate a number of new enthusiastic converts.

A number of the conventioneers took a field trip to the AleXitE mine at Rosita, Colo., combining this with a sightseeing trip over the Skyline Drive. Another high-spot of the convention was an interesting series of movies on lathing and plastering furnished by the Gypsum Association.

S. W. Johnson, Combined Metals Reduction Company, Salt Lake City, was elected to the board of directors. Other members are as follows: President, T. C. Carter; vice-president J. Don Alexander, president of AleXitE Engineering Division of Alexander Film Company, Colorado Springs; Oliver N. Gregg, president of Gregg Lumber Company, Grand Rapids, Mich.; C. H. Hall, president of Standard Perlite Corporation, Pasadena, Calif.

Three new members were admitted to the institute. The operations and direction of the research will be handled by Wharton Clay, secretary-treasurer of the Perlite Institute, 35 West 53d Street, New York 19, N. Y.

Marshall Plan aid will provide $1,535,000 for the building of a cement plant at Lixhe in the Liege province of Belgium. The announcement was made by Robert M. Hanes, head of the Economic Cooperation Administration's mission in Belgium.

Allis-Chalmers-Lellep Kiln System Announced For Basic Industries

A new and highly efficient heat recuperating kiln process will be made available soon by Allis-Chalmers' basic industries machinery department.

According to company engineers, this new A-C-L (Allis-Chalmers-Lellep) kiln system, for the wet as well as dry process of cement manufacture, is a marked improvement over the original heat recuperating kiln system invented by Dr. O. G. Lellep approximately 22 years ago.

Dr. Lellep, well known thermodynamics and metallurgical engineer, now with Allis-Chalmers as a consultant, has been instrumental in the design of the new A-C-L system.

In principle, the new A-C-L unit receives its feed in the form of pellets approximately ½ in. in diameter, made of moistened dry cement raw mix or crushed filter cake. These pellets are carried to the rotary kiln on a traveling grate passing through a two-compartment chamber. As the porous bed of pelletized raw material traverses this chamber, hot gases from the rotary kiln are passed through the bed of material twice, thereby extracting the maximum quantity of heat from the gases and greatly reducing stack gas volume and dust loss. When the raw material enters the rotary kiln, calcination is approximately 30 percent completed.

With the newly designed A-C-L system, heretofore unknown low fuel consumption of 700.00 B.t.u.'s per barrel of cement clinker is possible for the wet as well as dry process cement manufacture. This low rate of fuel consumption provides additional savings by virtue of reducing the cost of facilities required for the preparation and storage of fuel. Economies are also effected in building construction, as the A-C-L kiln is approximately one-third the length of a conventional long kiln.

• Looking toward the season of good will, the staff of Pit and Quarry suggests joining the March of Dimes as a post-holiday "must."

N.S.G.A. Safety Contest Awards Go to Texas, California Plants

The Dolen plant of the Texas Construction Material Company at Romayor, Tex., and the Fair Oaks No. 111 plant of Pacific Coast Aggregates, Inc., at Fair Oaks, Calif., won awards in the 20th annual National Sand and Gravel Association Safety Competition, conducted by the U. S. Bureau of Mines. These operations were awarded trophies for having achieved the best safety records in the two groups of sand and gravel plants in the competition.

In the group working 100,000 or more man-hours, the Dolen plant, a wet operation of the Texas Construction Material Co., had the most outstanding record. It operated 108,060 man-hours without a disabling injury during 1948. In the five years that the Dolen plant has been enrolled in the competition, it has twice achieved perfect safety records. The employees and officials can be proud of the commendable safety accomplishments of their plant. In the competition for the trophy in this group, two other operations also achieved perfect safety records for the year. However, they were ranked second and third in the group, since their exposure-time was less than that of the winning plant.

In the group working less than 100,000 man-hours, the Fair Oaks plant, a combined wet and dry operation of the Pacific Coast Aggregates, Inc., won the trophy by compiling an injury-free record during a total work-time of 81,901 man-hours. In this group a total of 43 sand and gravel plants had perfect safety records for the year. However, the record of the Fair Oaks plant was the best as it operated the most man-hours without a lost-time injury in 1948.

Statistics of the Contest

The participation of 103 sand and gravel plants in the 1948 competition was the largest in its 20-year history and was a marked increase over the enrollment in the preceding year. There were 172 disabling injuries at these plants during a total of 5,857,039 man-hours of work. The injury-severity rate of 3.244 days lost per 1,000 hours of work was an improvement over the corresponding rate of 3.338 in 1947 and was considerably better than the average rate of 4.551 for the 20 years of the competition. Although the injury-frequency rate of 29.366 was slightly higher than in 1947, it was lower than 20-year average rate for the competition.

Plants enrolled in the 1948 competition are classified in three types of operations—dry, wet and combined dry-wet. The 78 lost-time injuries in wet operations occurred at a rate of 23.868 per million man-hours, which was much more favorable than the frequency rate of 29.366 for all operations. Although dry plants had a frequency rate that was higher than the average for all operations, their severity rate of 0.735 days lost per 1,000 man-hours of exposure was considerably lower than the average rate of 3.244. Combined dry-wet plants entered in the 1948 contest had higher frequency and severity rates than the other two types of operations. The 1 fatal injury that occurred in the enrolled plants was charged to a dry-wet operation and resulted in a rather high severity rate for the operations of this type.

Injury-Free Records

Employees and officials at 46 of the 103 competing sand and gravel operations in the 1948 contest achieved the outstanding safety records of operating throughout the year without any lost-time injuries according to the Bureau of Mines. Men of these 46 plants, of which two were trophy winners, worked 1,337,351 man-hours, or 23 percent of the total worktime in all the enrolled plants. The attainment of injury-free records at any plant indicates close cooperation of employees and officials in very effective safety programs. The following plants (excluding the trophy winners), arranged in order of hours of exposure, attained perfect safety records in 1948:

Dredge No. 9 river plant, Dravo Corporation, Keystone Division, Neville Island, Pa., 106,683 man-hours.

Chattanooga dry-bank and river plant, Dixie Sand and Gravel Corporation, Chattanooga, Tenn., 104,881 man-hours.

Milwaukie dry-bank plant, Portland Road and Driveway Company, and T. P. Sand and Gravel Company, Milwaukie, Ore., 64,220 man-hours.

Dividing Creek wet-pit plant, South Jersey Sand Company, Dividing Creek, N. J., 58,714 man-hours.

Missouri River plant, Stewart Sand and Material Company, Kansas City, Mo., 54,090 man-hours.

Orange dry-bank plant, Consolidated Rock Products Company, Orange, Calif., 47,179 man-hours.

Boonville No. 1 dry-bank plant, Eastern Rock Products, Inc., Boonville, N. Y., 46,662 man-hours.

No. 7 wet-pit plant, American Aggregate Corporation, Logansport, Ind., 44,410 man-hours.

Maxwell wet-pit plant, American Aggregates Corporation, Indianapolis, Ind., 33,898 man-hours.

Akron dry-bank plant, The Rubber City Sand and Gravel Company, Akron, O., 32,396 man-hours.

Monmouth dry-bank plant, Maine Sand and Gravel Company, Inc., Lewiston, Me., 32,183 man-hours.

St. Joseph River plant, Pioneer Sand Company, St. Joseph, Mo., 31,348 man-hours.

Correctionville dry-bank and dry-pit plant, Concrete Materials Company, Correctionville, Ia., 29,050 man-hours.

Sierra dry-bank plant, Consolidated Rock Products Company, Monrovia, Calif., 28,186 man-hours.

Brilliant wet-pit plant, The Brilliant Sand Co., Brilliant, O., 25,931 man-hours.

South Bend dry-pit plant, South Bend Sand and Gravel Corporation, South Bend, Ind., 25,487 man-hours.

Piketon dry-bank and dry-pit plant, The Standard Slag Company, Piketon, O., 23,767 man-hours.

Topeka river plant, The Consumers Sand Company, Topeka, Kan., 23,327 man-hous.

Yardley dry-pit plant, Union Sand and Gravel Company, Spokane, Wash., 21,501 man-hours.

Clinton wet-pit plant, Davis Sand and Gravel Corporation, Clinton, Md., 20,547 man-hours.

Trenton No. 2 dry-pit plant, Eastern Rock Products, Inc., Barneveld, N. Y., 19,493 man-hours.

Cleveland dry-bank plant, The Schmidt Brothers Sand & Supply Company, Cleveland, O., 18,065 man-hours.

Byron wet-pit and river plant, Concrete Materials Company, Byron, Ill., 18,311 man-hours.

San Juan Capistrano dry-pit plant, Graham Brothers, Inc., San Juan Capistrano, Calif., 17,776 man-hours.

Star Brick river plant, General Concrete Products Corporation, Star Brick, Pa., 17,040 man-hours.

Boonville river plant, Missouri River Sand and Gravel Company, Boonville, Mo., 16,308 man-hours.

Burlington dry-bank plant, Acme Sand and Gravel Company, Inc., Burling, Mass., 16,175 man-hours.

Wilton dry-pit plant, Hudson Valley Sand & Stone Company, Wilton, N. Y., 15,719 man-hours.

Los Gatos dry-pit and wet-pit plant, Los Gatos Sand & Gravel Co., Los Gatos, Calif., 14,036 man-hours.

Palatka wet-pit plant, Keuka Sand Company, Palatka, Putnam County, Fla., 13,460 man-hours.

East Peoria dry-pit plant, Peoria Concrete Construction Company, East Peoria, Ill., 13,360 man-hours.

Ottawa dry-pit plant, Illinois Silica Sand Company, Ottawa, LaSalle County, Ill., 13,065 man-hours.

Charleston wet-pit and lake plant, Edisto Sand and Gravel Company, Charleston, S. C., 12,480 man-hours.

Fort Gay river plant, Laval Sand Company, Inc., Fort Gay, Wayne County, W. Va., 11,855 man-hours.

Marietta dry-bank plant, The Marietta Concrete Corporation, Marietta, O., 10,860 man-hours.

Prairie wet-pit plant, Prairie Sand and Gravel Company, Prairie du Chien, Wis., 10,468 man-hours.

Camden wet-pit plant, White Gravel Company, Camden, Preble County, O., 9,610 man-hours.

Columbus river and lake plant, Gerhold Company, Columbus, Neb., 9,000 man-hours.

Dixiana dry-pit plant, Capital Sand Company, Dixiana, S. C., 8,580 man-hours.

Winona wet-pit plant, Stehn Sand and Gravel Company, Winona, Minn., 7,523 man-hours.

Lewiston dry-pit plant, Lewiston Crushed Stone Company, Inc., Lewiston, Me., 7,063 man-hours.

Prospect wet-pit plant, Penry Sand and Gravel Company, Prospect, O., 5,305 man-hours.

Lawton dry-pit plant, Lawton Glass Sand Company, Lawton, Ky., 4,800 man-hours.

Topeka river plant, River Sand Company, Topeka, Shawnee County, Kan., 2,080 man-hours.

Eligibility for Enrollment

The Safety Competition of the National Sand and Gravel Association is an annual contest conducted by the Bureau of Mines. Any sand and gravel operation may be entered by filing a completed enrollment application with the Accident Analysis Branch, Bureau of Mines, Washington 25, D. C. Blank forms are available upon request. After enrollment, eligibility in the contest is maintained by sending to the Burueau monthly reports of man-hours worked and complete reports of each lost-time injury at a plant. Injury forms supplied by the Bureau or copies of reports prepared for a state commission or an insurance company may be used to report data pertaining to disabling injuries. A trophy is awarded by *Rock Products* to the winner in each of the two size groups.

Identical Plants

A total of 59 plants competed in both the 1947 and 1948 competitions. The 1948 injury-frequency rate for these identical plants was 26.862 per million man-hours, as compared with 28.866 in 1947, or 7 percent lower; the severity rate was 2.733 per thousand man-hours worked in 1948, as compared with 3.723 in 1947, or 27 percent lower. The decrease in the injury-severity rate is due to the fact that there were no fatal injuries in 1948, whereas there was one fatal in 1947.

Comparison of the data of these 59 identical plants shows that 23 had more favorable severity rates, whereas 25 had less favorable rates in 1948 than in 1947, and 11 were injury-free in both years.

Causes of Injuries

A total of 172 disabling injuries occurred at competing plants in 1948. Causes were stated for 168 of these lost-time injuries. Falls of persons accounted for 39 injuries; handling objects, 35 injuries; and falling objects, 23 injuries—thus, the three principal causes resulted in 97 disabling injuries, or 58 percent of the total for which causes were specified. Injuries from machinery, with an average of 682 days lost per injury, were more severe than the injuries for any other listed cause. Ranking second in severity were the injuries associated with falling objects, which had an average severity of 211 days lost per injury.

Falls of persons was the most frequent cause of lost-time injuries in 1946 and 1947, as well as in 1948. In the competitions of both 1947 and 1948, handling objects caused the second highest number of injuries, but in 1946 haulage was second in injury frequency. The cause of injuries with the highest severity in 1947 was falls of persons, whereas in both the 1946 and 1948 contests injuries caused by machinery resulted in the highest average number of days lost per injury.

Glass Making Plant Sought To Utilize Vast Silica Supply

At Parkdale, near Canon City, Colo., the Consolidated Feldspar Corporation of Trenton, N. J., is producing feldspar at the rate of more than 350 tons per day at its $3,000,000 flotation plant.

Iron-free silica, a by-product of the operation, piles up at the rate of 200 tons per day. Since the opening of the plant 21 months ago a stockpile of the material containing 16,000 tons has been built up. Both the firm and the Pueblo Chamber of Commerce are seeking to interest glass manufacturers in building a plant in the area, in order to utilize the silica, which tests 99.8 percent pure and therefore suitable for glass making. It is said that other materials needed in glass manufacture are also available locally.

Mining at Parkdale is done in open quarries. V. L. Mattson is chief engineer. The flotation plant is said to be the second of its kind in this country.

Apres le Deluge Opening Announced by Douds Stone

Operations have been resumed at the quarry of Douds Stone, Inc., Douds, Ia., after the completion of rehabilitation which required many months. Nearly 2,000,000 gallons of Des Moines River water which inundated the quarry in 1947 had to be pumped out and equipment had to be reconditioned.

Robert A. Bruce is president of the firm, and Arthur J. Secor is secretary.

P.C.A.'s Technical Group Convenes at Los Angeles For 1949 Regional Session

More than 100 executives and technical men, all members of the General Technical Committee of the Portland Cement Association, attended the 1949 regional meeting of the committee at the Ambassador Hotel, Los Angeles, Calif., October 4 to 8. Cement plant operators and operating officials from 12 states and Canada representing 34 companies engaged in the manufacture of portland cement, were present.

• C. F. Clausen, manager of manufacturing research for P.C.A. at Chicago, boarding the train with Mrs. Clausen to attend the Los Angeles meeting.

According to E. A. Ledyard, executive chemist of the Monolith Portland Cement Company, Monolith, Calif., and chairman of the association's General Technical Committee, the meeting gave plant operators and operating officials a chance to learn at first hand about the Portland Cement Association's research activities. It also permitted members to visit important concrete structures throughout the Southwest. The five-day meeting in Los Angeles also provided enough time for visits to dams and various concrete structures in southern California.

Included among the program's principal speakers were Dr. A. Allan Bates, the association's vice-president for research and development, Chicago; Prof. R. E. Davis of the University of California; Oliver G. Bowen, consulting structural engineer, Los Angeles; L. H. Tuthill, manager, Field Research, U. S. Bureau of Reclamation, Denver; F. W. Panhorst, bridge engineer, California Division of Highways, Sacramento; and Bailey Tremper, materials engineer, Washington Department of Highways, Olympia.

Also featured on the program was a showing of the film *The Drama of Portland Cement*, recently made by the Portland Cement Association. Three cement plants in the Los Angeles area were visited during the five-day meeting.

• Since the fall of 1946, three Model 36 FD rear-dump Euclids powered with Cummins diesels have hauled 1,750,000 tons of rock from quarry to crusher for Cumberland Quarries, Inc., near Albany, Ky. These hauling units are now working three 8-hr. shifts a day and each of the Cummins-Powered Rear Dumps moves 100 t.p.h. over haul roads that average three-tenths of a mile one way. All aggregate produced by Cumberland Quarries is used in concrete construction at Wolf Creek Dam, 12 miles away.

Pacific Carbide & Alloys Co. Buys Quarry Through R.F.C.

Pacific Carbide & Alloys Company of Portland, Ore., has acquired the old Black Marble limestone quarry near Enterprise, Ore., from the Reconstruction Finance Corporation. Included in the sale were three shaft kilns and other equipment. The deposit comprises about 240 acres.

According to James H. Jensen, company engineer, immediate plans call for only sufficient quarrying and crushing to supply the limestone needs of the two Ellernan calciners now in service at the concern's calcium-carbide plant located in Portland.

Midwestern Perlite Corp. To Make Lightweight Material

Midwestern Perlite Corporation will utilize Oklahoma gas and Nevada ore to produce a new lightweight building material called Panacalite in a plant to be erected in Oklahoma City, according to an announcement made by the Oklahoma Planning and Resources Board.

The plant will have three sections—a raw material storage building, a second structure for housing equipment, and a finished material warehouse. Basic patents for the firm's manufacturing process are owned by the Combined Metals Reduction Company of Salt Lake City.

New Anti-Bacterial Cement Offered by North American

An important new product of the North American Cement Corporation of New York is its anti-bacterial cement. According to the manufacturer, "bacteria and fungi cannot grow on the surfaces of damp or wet concrete floors in which this cement is used."

North American anti-bacterial cement conforms to the physical and chemical requirements of American Society for Testing Materials specifications for portland cement, C150-47, Type II. In tests conducted by E. L. Conwell & Company, Philadelphia, it was shown that "the physical properties of North American anti-bacterial cement more than meet standard specifications for portland cement."

Among the uses of this new product are the following: dairies, barns, gymnasiums, locker rooms, swimming pools, bath houses, plant cafeterias, restaurant kitchens, hotel kitchens, etc.

Zonolite Company Reports Increased Profits in 1948-49

The Zonolite Company, largest producer of vermiculite in the United States, with plants in Blue Island, Ill., Dearborn, Mich., Libby, Mont., Albany, N. Y., Pittsburgh, Pa., and Travelers Rest, S. C., reported earnings of more than $520,000 for the year ended March 31, 1949. Last year during the comparable period, the figure was $356,000. In June the company declared a 10-cent dividend on its 984,112 outstanding shares.

LaSalle Materials Co. Reopens Solvay Quarry At Winnfield, La.

Operation of the quarry at Winnfield, La., formerly owned by the Solvay Process Company of Baton Rouge, has been resumed under the ownership of the LaSalle Materials Company, Inc., of Alexandria, La. The quarry had been closed since Solvay disposed of its holdings at Winnfield about a year ago.

LaSalle Materials Company has been affiliated with Solvay for a number of years in the disposition of materials from the quarry at Winnfield, but has not until this fall installed equipment at the plant.

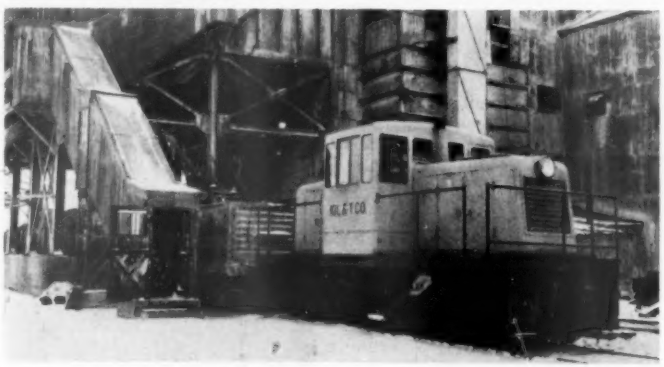
Due to the recent death of John Royal, who was to have managed the quarry at Winnfield, work at the plant is being supervised by O. R. Stephens, president and general manager of LaSalle Materials.

Permanente Men Celebrate 1000-Day Safety Record

This Earth, attractive company publication of the Permanente Cement Company and related firms, carried in its September issue a full-page candid shot of five Permanente workers celebrating 1,000 days of work without a lost-time accident.

The "picture of the month" showed Art Miller, Jim McAmally, Harold Brown, Jimmy Via and Superintendent R. Joliff, enjoying cigars to mark the completion of the 1000-day accident-free period.

Frontier Stone Products, Inc., and the Louisville Cement Company of New York won recognition for no lost-time accidents in the Tenth Annual Accident Reduction Contest for Buffalo area firms sponsored by the New York State Insurance Fund. The firms were honored at a banquet held at the Hotel Statler, Buffalo.



• In December, 1947, Kelley Island Lime and Transport Co., at Clay Center, O., replaced a 65-ton steam locomotive with a 50-ton General Electric diesel-electric unit. Since then, two 8-hour shifts for the steamer have been cut to one 9-hour shift for the new locomtive; fuel costs have dropped from $15 a day to $14 a week; availability has risen to nearly 100 percent; and total savings of $1000 a month have been estimated by company officials. The diesel-electric operates over 7 miles of fairly level track, hauling up to twelve 30-ton cars loaded with lime, by-products, residue, or water.

30 years ago in Pit and Quarry

By WALTER E. TRAUFFER

THE big news in the November, 1919, issue of PIT AND QUARRY was the reorganization on October 1 of the Lime Association, which also changed its name to the National Lime Association, the name originally adopted when the association was formed 15 years earlier, and which it still bears. At this meeting the reorganization was decided on. A new constitution was adopted which provided for the division of the country into 14 producing districts, each to do its own detailed promotional work. This change was expected to work to the advantage of all the members both in reduced cost and in the effectiveness of the work done. The chemical and agricultural bureaus were to be conducted from Washington as before.

Charles Warner, chairman of the board of The Warner Company, who recently completed his 50th year with the firm.

Norman G. Hough, former chief of the construction bureau, was elected secretary of the association, a position he filled very capably until his retirement some years ago. The following officers were elected for the ensuing year: president, Charles Warner, Charles Warner Co., Wilmington, Del.; vice-president, George Nicholson Jr., White Marble Lime Co., Manistique, Mich.; treasurer, A. H. Lauman, National Mortar & Supply Co., Pittsburgh, Pa. It is of interest that Mr. Warner is the only one of the three officers and 14 directors still active in the lime industry.

Advance notice was given in this issue of the meeting of the National Agricultural Limestone Assn., to be held November 18 at Columbus, O. An impressive list of speakers was promised and promotion was to be emphasized.

Agstone also received attention at the Ohio State Fair, where Ohio State University had an attractive and educational exhibit.

Safety was emphasized with the first installment of an authoritative series of articles on *Safety Factors in the Use of Explosives in Rock Quarrying*. Another article told how to prevent rock slides in quarries.

The high caliber of the original editorial articles to be found in these pages 30 years ago was evident in an article on *Fundamentals in Choosing Plant* by Daniel J. Hauer, associate editor. He cited several instances which contrasted good and poor judgment on the part of producers in selecting plants and equipment.

A detailed article described a "hush-hush" subject of World War I, the recovery of potash from cement plant waste gases. Fourteen plants in this country then had equipment for recovering potash, with a potential capacity of about 15,000 tons annually.

A feature article by Raymond B. Ladoo, then mineral technologist of the U. S. Bureau of Mines, described how talc was mined and milled in Vermont. A complete flow-sheet of a typical operation was included.

Plant operational articles received their usual share of attention, the plants described being those of the Harsh Phosphate Co., at Nashville, Tenn.; the Pittsburgh Plate Glass Co. (silica sand) at Charleroi, Pa.; and the Cedar River Sand & Material Co., Waterloo, Ia.

Pacific Coast Aggregates Rebuilding Rockfield Plant

Rebuilding is under way at the Rockfield, Calif., sand-and-gravel plant of Pacific Coast Aggregates, Inc., San Francisco, following a disastrous fire which caused about $100,000 damage and virtually destroyed the operation.

The plant is located near the Friant Dam and was taken over by the big San Francisco concern from the old Grant-Pacific Rock Company some years ago. John Sienknecht is superintendent.

A recent publication of the American Institute of Mining & Metallurgical Engineers is entitled *Industrial Minerals and Rocks* (non-metallics other than fuels), compiled by Samuel H. Dolbear, chairman of the editorial board of the committee on the industrial minerals volume. 1156 pages. Price $8 per copy.

Give Your Association A Paid Secretary

(Reprinted from PIT AND QUARRY, *October, 1919)*

ONE of the axioms among people who have given special attention to association work is that an association, in order to have the greatest success, must have someone whose sole business it is to promote the interests of the organization.

It sounds all very well for a bunch of men to get together and say they will pass the duties of the organization around from one to the other, each man's service to be contributed as a free-will offering for the good of the cause, and thus keep expenses down to the minimum; but in actual practice such an organization does not reach its highest possibilities.

Each one of these men has his own personal business to attend to, and if he expects to see it succeed and keep out of the hands of a receiver, it must have the first claim upon his time and thought. So the association gets such attention as can be given it, at times when other things do not press; while probably just at the time when the association should have the most active work in its behalf, private claims are also most urgent and association affairs go over until a more convenient season.

The history of work of this kind is that the employment of a paid secretary has always been justified. Sometimes he has been able to increase the membership sufficiently to pay his salary without increased costs to the individual members; while in cases where it has been necessary to raise the individual contribution, the increase has been more than justified by the greater benefits derived by the membership.

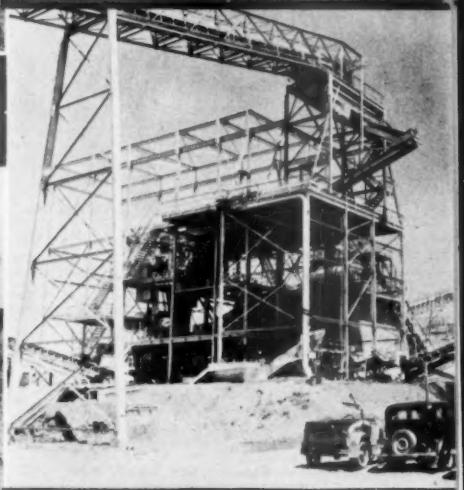
There are a number of state, district and local organizations in the crushed stone, sand and gravel fields which are not securing any great measure of tangible results, simply because nobody is paid to be on the job and look after the interests of the members. A good man working on the job all the time, with nothing else to think about, can get results which are absolutely impossible under the loose type of organization where there is no centralized responsibility.

We recommend these suggestions to the careful consideration of the various associations in our field who do not already have paid secretaries, believing that they can make no better move at the present time than by securing a first-class man for such office, paying him an adequate salary and giving him a comparatively free hand to work out improved conditions in the locality covered by the membership. If he does not justify himself and earn every bit of the salary paid him, it is because a mistake has been made in his choice, and not through any fault of the general plan.

PACIFIC COAST AGGREGATES

Operations viewed from pit, showing main conveyor from hopper to primary plant.

Below: This view shows the primary preparation plant (left); stackers to surge piles and, at right, the finished-material plant above the bins.



Closeup of the primary preparation plant.

another ON THE SPOT report

PACIFIC Coast Aggregates, Inc., of San Francisco is this year attaining near-capacity production at its mammoth new Plant No. 104 at Eliot, Calif.

Under construction for the last three years, this new operation is one of the largest and finest aggregate plants in the nation. Peak output has reached 1,000 t.p.h. of washed and sized material, none of it being crushed. The "dry" (or crushed gravel) side of the plant is still inoperative, but the screens and crushers have been delivered, structural work has been completed, and crushed material will be in production some time in 1950.

The recognized advantages of the surge-pile storage system have been utilized to the nth degree at the new Eliot plant, providing a degree of flexibility in operation new to the industry. Four surge piles of semi-finished materials have already been established to supply the final washing-and-screening plant and, when crushed material is processed, three additional surge piles will be built up. Live storage capacity of the piles, each provided with recovery belts in concrete tunnels, runs as high as 12,000 tons each!

Structures are entirely of concrete and steel; excess pea gravel is milled into sand to increase the output of fines to meet the demand; and a new type of sand dewatering wheel has been incorporated in the flow. All controls are interlocked and centralized for efficiency, and excavation and transportation of the pit-run is done economically by all-purpose self-propelled earthmoving units. More than 5,000 ft. of belt-conveyors, measured on a center-to-center basis, are already in service, and nearly 3,000 ft. additional will be installed next year to tie in the crushed-gravel side.

Pacific Coast Aggregates is justly proud of the new plant, which merits the distinction already accorded it as the "show place" of the nation's aggregates industry. It is the culmination of the company's multi-million-dollar post-war improvement program. (Earlier accomplishments have been revealed in some detail on these pages in previous issues.)

The Eliot deposit embraces about 1,400 acres of considerable depth and high quality except for annoying streaks of clay which average about 10 percent of the material excavated. It is located in the Livermore Valley, 43 miles east of downtown San Francisco. Three separate plants, two of which have now been torn down, previously operated on the Eliot site. Plant No. 103, located about ½ mile from

Eliot Plant—Newest Titan Of the Industry

By HARRY F. UTLEY

Final washing-and-screening plant above the [illegible] structure. Loading plant in distance.

Cars may be loaded, via reversible belts, from either side of this building, which houses the final rinsing screens.

the new plant, still stands and is now utilized merely to re-crush some of the material trucked over from the new plant. Eventually it, too, will be dismantled.

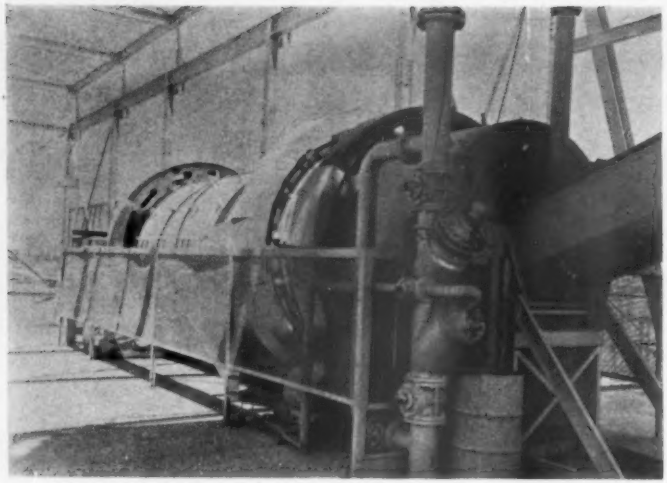
The new pit, opened close to the plant hopper, is being worked exclusively by Terra Cobra scrapers. Two of these units, aided by a "Caterpillar" tractor acting as a pusher at the point of loading, are at present able to keep the plant fully supplied with pit-run material. Pacific Coast Aggregates pioneered this method of digging, loading and transporting raw materials with self-propelled scrapers. Originally adopted at its Olympia sand plant, the method is now in use at most of its aggregate-plant pits*; and the speed and economy of the system has proved a source of general satisfaction to the management. Without the multiple surge-pile system, however, some difficulty might be experienced due to the fact that the scrapers, operating on a relatively flat slope, make a cut of only about 6 in. deep in rolling up a load. Because of the stratification of the deposit, the scrapers thus often harvest only fine or only coarse gravel, depending upon the layer being excavated. Any primary lack of balance between fines and coarse, however, is corrected later by the surge piles, from which feed of semi-processed material can be regulated to the washing-and-screening plant in the desired proportion.

The present scraper haul is only about 500 ft., and this is never expected to exceed 2,000 ft. Later on the increased length of haul will, of course, necessitate the employment of one or more additional units.

The receiving hopper, spanned by grizzly bars spaced on 8-in. centers, feeds a 42-in. by 500-ft. belt conveyor which runs up to the primary preparation plant. A reciprocating feeder carrying 48-in. pans puts the material on the belt. The primary preparation plant is a separate and distinct processing unit, operating solely to build up sized material in the several surge piles which supply the final-processing plant. Both theoretically and practically, the primary plant is required to operate for longer periods of time than does the finishing plant; the pit conveyor has a capacity of but 800 t.p.h., whereas the finish plant can wash, classify and bin 25 to 30 percent more material than the primary plant can produce in a given period.

All the pit run coming up the

*Self-Propelled Earth Movers Excavate, Load and Transport Pit Run at West Coast Plant, (PIT & QUARRY, November, 1948, pp. 96-98.)

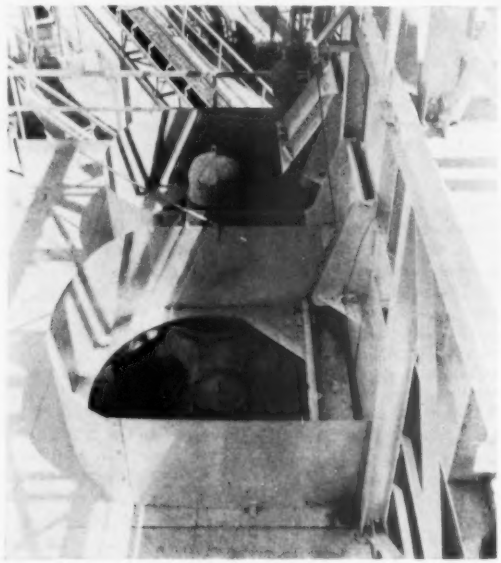


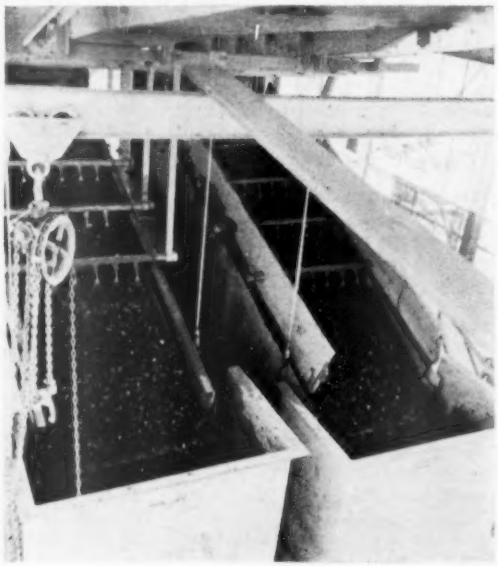
The first step in processing the pit-run involves scrubbing in this 8- by 30-ft. blade mill.

conveyor to the primary plant is put through an 8- by 30-ft. revolving scrubber. This unit (a Hendy blade mill which originally saw service in the Redding, Calif., plant, which produced the aggregates for Shasta Dam) does a remarkable job of scouring the material, discharging via chute to an Allis-Chalmers 5- by 12-ft. Ripl-Flo triple-deck scalping screen. This screen, equipped with Rex sprays, has 3½-in. square punched-plate openings on the top deck, 2½-in. on the middle, and 1½-in. on the lower deck. Top-deck rejects pass to the Allis-Chalmers No. 6N primary gyratory crusher, the product joining the 2½-to-3½-in. middle-deck rejects and traveling over a 24-in. by 285-ft. stacker belt to build up a surge pile of 4,000 tons live storage capacity. This reserve pile, composed of crushed and uncrushed gravel in the 2½-to-3½-in. size range, will ultimately supply the crushed-material side of the plant, yet to be completed. For the present, excess material is trucked to old Plant No. 103 for recrushing.

Returning to the scalping screen, the minus-2½-in. material passing the middle deck constitutes about 90 percent of the raw feed to the plant. After the lower deck of the screen takes out the 1½-to-2½-in. gravel, which is carried by a 24-in. by 434-ft. stacker belt to build up a surge pile of 3,000 tons' live storage capacity, the throughs are chuted and the flow split to a pair of 4- by 14-ft. Ripl-Flo 2-deck spray-equipped screens. Top-deck rejects from the screens, consisting of ½-to-1½-in. material, feed a 24-in. by 359-ft. belt which stacks a 5,000-ton gravel surge pile. The ¼-to-½-in. retained on the lower decks is carried by a 24-in. by 312-ft. stacker belt to the pea gravel surge pile having 4,000 tons' maximum live storage. Throughs from one of the screens go to a conventional sand drag; those from the other go to a new type of sand wheel developed by the Conveyor Co., Los Angeles.

This wheel, known as the "Conveyco" sand dewaterer, on which patents are now pending, is said to be the first device to operate on the principle of bottom draining of the sand by suction. Essentially, it consists of a steel wheel 10 ft. in diameter and 6 ft. wide. Built into the wheel are 24 3-ft. buckets, each lined with wood-backed fiber brushes to provide bottom drainage. The backs of the buckets are, in turn,





Below, left: Only one crusher, this primary gyratory machine, has been installed in the plant so far. The remainder of the crushers and the screens will be in service some time in 1950.

Below, right: This pair of screens in the primary preparation plant splits the gravel into two sizes for stacking in surge piles. Throughs are given preliminary treatment in the sand preparation machines and stored in the 12,000-ton sand surge pile.

connected to automatic valves (one on each side of the wheel) and 4 to 5 in. of mercury is maintained in the vacuum tank at one end of the unit. Operation may be with or without vacuum, as desired.

Feed and discharge of the wheel are conveniently located at the same end of the tank, actual height of feed being 4½ ft., and of the discharge, 3½ ft., so that practically no added height was required for the installation.

The dewatered minus-¼-in. semi-finished sand from the drag and wheel is carried transversely by short belt to a 36-in. by 337-ft. stacker conveyor to build up the largest surge pile—live storage, 12,000 tons.

The sand supply is augmented in the primary plant by wet grinding of excess pea gravel, recovered by short tunnel belt from the ¼-to-½-in. surge pile and put through a Marcy 8- by 12-ft. rod mill. The mill is fed from both ends and has a center peripheral discharge. The mill has been yielding up to 75 t.p.h. of minus-4-mesh fines. Product goes to the sand wheel for dewatering and combines with the natural sands for deposit in the sand surge pile.

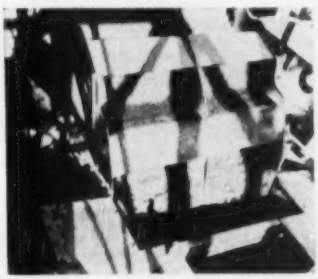
The four surge piles of semi-finished gravel and sand contain sufficient material in live storage to keep the final-preparation plant supplied for a 3-day run. The arrangement also permits selective recovery; the materials may be withdrawn separately or in any combination, depending upon demand. Being relatively clean and dry, there is no cohesion, assuring against hang-ups and allowing free flow to the tunnel recovery belts.

Remote-controlled short belt feeders put the material onto their respective belts in the tunnels. These belts are 24 in. wide and range in length from 261 to 393 ft. Those from the sand and pea-gravel piles converge at a transfer station to feed a 36-in. by 222-ft. inclined conveyor running up to the fine-screening department above the bins. Those from the two coarse gravel piles discharge at a common transfer point to feed a 24-in. by 220-ft. belt that ascends to the coarse gravel screens, also atop the bin structure.

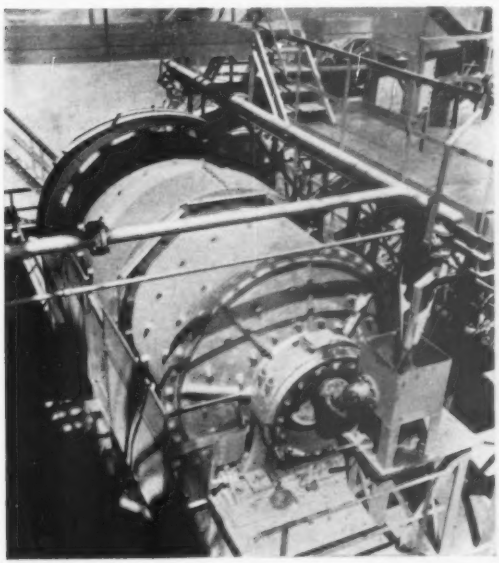
First pass of the minus-½-in. material (including the sand) is to a bank of three identical Allis-Chalmers Low-Head 4- by 14-ft. double-deck screens. Rejects from the top deck drop to the ½-to-⅜-in. bin and the divided lower decks take off the ¼-to-⅜-in. gravel as finished material. Of the two sizes of throughs, the ¼-in. No. 4 is finished material and goes to its proper bin, while the finest material is flumed to another bank of three sand screens, consisting of identical Ripl-Flo 4- by 14-ft. double-deck units. Sand retained on the top and bottom decks (No. 8—No. 4, and No. 16—No. 8, respectively) drops to bins. The minus No. 16 throughs are dewatered in another Conveyco wheel similar to the one in the primary plant, and the product is discharged directly to the bin. Use of the wheel for dewatering the finest sand fraction made it possible to dewater almost 100 percent for binning direct without further drying or drainage. This was an important requirement, as it is often desired to feed immediately from bin to blending belt. The wheel being capable of handling up to 150 t.p.h. of the minus-16-mesh sand.

On the coarse gravel side, four Low-Head 4- by 14-ft. double-deck screens wash and size the gravel arriving by belt from the surge piles. Six sizes of gravel are made and stored in the bins, ranging from a top size of 1½ to 2½ in., down to 3/16 to ½ in. Dirty water and any recoverable fines are flumed to a Wemco No. 48 screw classifier.

The concrete bin structure is divided into 20 compartments (two rows of 10 each) and has a total capacity of 5,000 tons. Twelve sections are required to store sand and gravel, the processing of which has just been detailed. Six sections will ultimately be used for crushed material when that side begins operating, and two compartments are de-



Right: This close-up of one of the new sand-dewatering wheels shows how dry the material is coming off the discharge side.



Pea gravel, fed into both ends of this 8- by 12-ft. rod mill, is ground wet and discharged peripherally from the center.

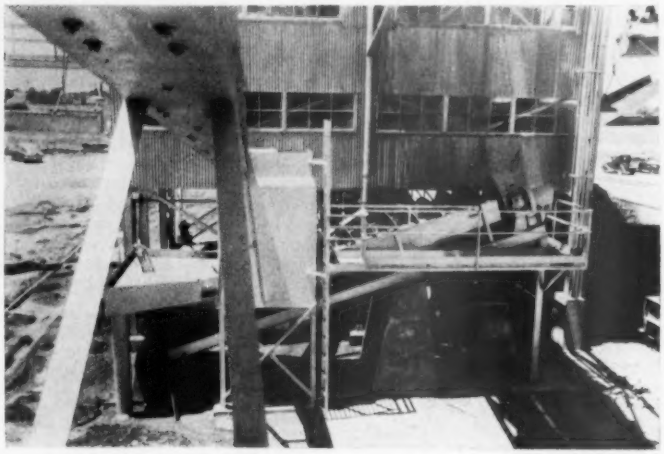
This bank of three screens makes No. 4 to No. 16-mesh sand. The minus-16 fines are dewatered in one of the sand wheels before going to the finished-material bins.

Another of the new-type dewatering wheels handles minus-16 mesh sand in the finished-material plant.

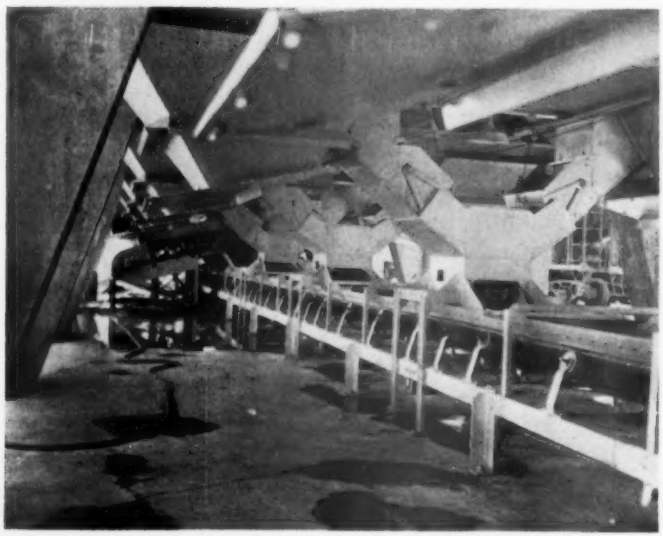
signed for overflow. None of the material is loaded directly from the bins, however. A 42-in. by 322-ft. recovery belt runs beneath the bins and on to the loading building. This loading and blending belt has a capacity of 1,000 t.p.h. and discharges at the loading station to a pair of Ripl-Flo 5- by 12-ft. rinsing screens. Two 42-in. by 37-ft. reversible loading belts can load open-top railroad cars at either side of the building. Waste water from the rinsing screens is flumed to the screw classifier previously mentioned, which reclaims any fines. The screw product is a conglomerate which is not re-processed. It is stockpiled in the open adjacent to the loading station and sold for road-maintenance work and miscellaneous purposes.

Overflow from the sand wheels and screw is flumed to a series of sumps and settling ponds to permit re-use of the water. A constantly dropping water table in the valley makes careful conservation a necessity; and the future water supply is a source of grave concern, not only to Pacific Coast Aggregates, but to the other aggregate producers operating in the area.

The main source of water for the new plant continues to be a reliable deep well about 325 ft. distant, which formerly supplied one of the earlier plants. This provides about 1,400 g.p.m. A new well was drilled to a depth of 600 ft. and a pump set at 220 ft.; an additional 500 g.p.m. is obtained from this source. Both pumps discharge to a sump from which a Fairbanks Morse 2,000-g.p.m. pump supplies the finish screening plant and the rinsing screens at the loading station. Water for the scrubber, screens and rod-mill at the primary processing plant comes from the settling ponds, a Food Machinery vertical pump operating under a 200-ft. head handling the supply. Transfer between ponds is done by a Fairbanks-Morse trash pump. The company also plans to install another pump so that the pond supply may be used as make-up water to augment the fresh supply at the finish-screening plant.



The screw classifier shown does a final job of reclaiming fines before the wash water goes to the settling ponds.



Duplex gates feeding the blending belt beneath the bins.

As one might expect in a modern plant such as this, controls for all motors are conveniently centralized and interlocked for smooth, safe operation. Lever-operated cables actuate the gates beneath the bins which feed the blending belt running to the loading station. Feed from the bins to the belt is direct except from the four sand compartments, which employ short, high-speed belt feeders to make the transfer.

The bunkers and loading station are located near the Livermore-Pleasanton county highway and the tracks of the Southern Pacific Railroad, which serves the plant. Considerable new trackage, with ample car storage facilities, was laid on the property to handle the car supply. A 45-ton G.E. diesel-electric locomotive does most of the switching, aided by two older Plymouth gasoline-powered units.

The plant will be fully completed when the crushed-gravel side gets

(*Continued on page* 96)

West Lake Quarry Achieves Low Power Cost Per Ton With Diesels

By WILLIAM M. AVERY

another ON THE SPOT report

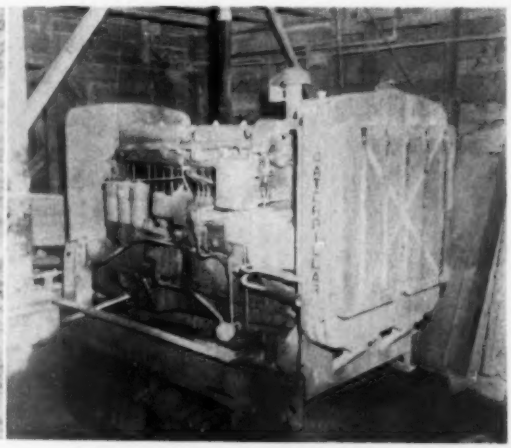
SINCE the firm started operations in October, 1939, West Lake Quarry & Material Company of St. Charles, Mo., has used individual diesel engines exclusively for driving all primary and auxilliary equipment in both the quarry and the crushing and screening plant. Of 20 engines in service today, ranging from 40 to 150 hp., all but one or two are "Caterpillar" diesel units. Eight of the engines are standby spares for use in the event of breakdowns or while others are being overhauled. Power for lights in the plant, and for driving relatively small units, such as screens, conveyors, and feeders, is generated with a D-17,000 diesel-electric set.

Compressed air is supplied to the quarry and other points of usage by two stationary compressors driven by 125- and 80-hp. engines. A 125-hp. drive powers the 2-cu. yd. Lorain shovel, and a Northwest shovel used for loading riprap has a 90-hp. drive. Three "Caterpillar" W10 bottom-dump wagons, drawn by DW10 diesel tractors, haul stone from three levels in the quarry up relatively steep ramps to the primary crusher.

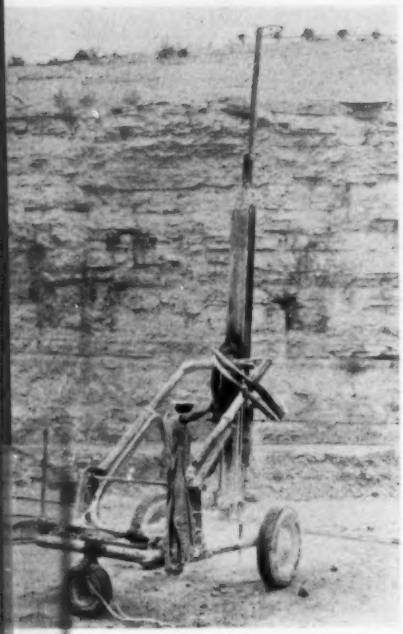
In the plant proper six diesels provide all the power for crushing, pulverizing, screening and conveying. These include two D-13,000 units which share the load on the Type ACS American pulverizer through which all production passes. Standard hammers are used when fines are desired, but when coarse stone is needed, special hammers, 2

• A cross-quarry view of West Lake Quarry & Material Company's plant, located near St. Charles, Mo. All three of the bottom-dump wagons which haul stone to the primary crusher are visible in this picture.

• Left: The 2-cu. yd. shovel loading one of the wagons. Both machines are powered by diesel engines. The wagons haul about 8 1/3 cu. yds. of stone per trip.



• Right: One of the two diesel engines which share the load on the company's pulverizer. There are six such engines in the plant proper.



• Even the wagon drills are diesel powered, since the two stationary compressors in the plant are driven by diesel engines. The deposit is worked in ledges, and blasts are set off almost every day.

inches shorter than standard, are installed. There is also another pulverizer in the plant, 30 by 40 Type C, which is occasionally used to produce fines.

Other diesel engines about the plant include one 90-hp. unit used to drive a water pump, four 90-hp. units in dump trucks, and two tractor-installed engines of 125 and 40 hp. Operating so many small, widely-separated engines always poses a fuel supply problem. At West Lake this difficulty was completely eliminated by installing a centrally-located 10,000-gal. storage tank from

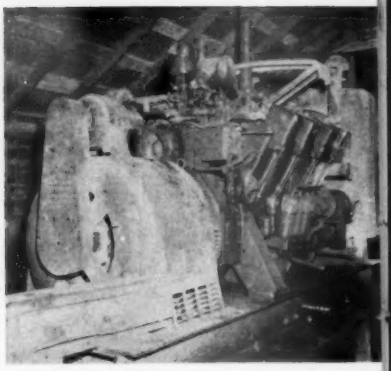
• A view of the main pulverizer. Relatively coarse stone is produced at will by this machine by changing to shorter hammers. Grate bars are spaced at 6 inches.

which oil is pumped to small supply tanks at each of the drives.

In regard to power costs, the company states that it burns approximately 5 gallons of fuel oil per hour per engine when the plant is operating at full capacity. At 10 cents per gallon, the cost of fuel alone for an hour's operation is 50 cents. The company's experience indicates that depreciation and upkeep cost another 50 cents per hour, and that the cost of lubricating oil is about 5 cents per hour per engine. Thus the total cost per hour for each engine in the plant is about $1.05, or, based on 12 engines operating, $12.60 per hour for the entire plant. The cost of power per ton of finished product on West Lake's hourly production of 200 tons is about 6.3 cents.

About 30 percent of West Lake's total output is marketed as riprap, 20 percent is pulverized to make

• West Lakes truck loading bins provide 800 tons of live storage capacity in 12 separate compartments.



• Power for running screens, conveyors, feeders and lights is provided by this diesel electric generator set.

agricultural limestone, and the remainder is classed as road stone. Riprap is produced at the 30- by 40-in. Pioneer primary jaw crusher, where a 4- by 12-ft. extra-heavy-duty vibrating screen scalps off plus 7-in. stone, dropping it to the quarry floor for later recovery.

There are in addition to the scalping screen, three 4- by 12-ft. Pioneer vibrating screens in the plant. Two of these are triple-deck, while the remaining one has four decks. These are located over storage bins which have 800 tons of live storage capacity in 12 separate compartments. Any size of stone of which there may be of surplus can be routed from any one of the bins to the pulverizer. In addition to its larger than usual live storage facilities, the company does considerable stockpiling of material.

West Lake employs about 25 men on two-shift operations. V. R. Cruse is president of the company and L. E. Trump is secretary-treasurer.

Oregon Pumice Shipments Top 1800 Carloads in 1948

In the Bend, Ore., area the booming pumice industry has enjoyed a spectacular growth during the last three years.

Whereas in 1946 only 60 carloads of the volcanic material were shipped from the area, the figure shot up to 713 in 1947 and to 1,813 in 1948. Shipments this year are expected to exceed the 1948 total, despite a slump in the building industry.

A survey of pumice production in Oregon was recently undertaken by the state department of geology and minerals. The study revealed five active operations in the vicinity of Bend, one at Chemult, and one at Burns.

Closer attention to grading and blending the finished products is said to have been attained than was observed in the earlier days of the development.

WASHINGTON NEWS LETTER

By S. HERBERT UNTERBERGER

WASHINGTON, like much of the rest of the nation, has pretty much come to the conclusion that the next economic depression will not start in 1949. There is general amazement, however, that consumer spending has stood up as well as it has. During the last six to nine months it has been business spending which fell off drastically and threatened to create a real economic crisis. Many businessmen apparently got panicky about their inventory position and just cut off their buying. If consumers had done the same thing, a depression would have been assured. Fortunately, most consumers did not share the businessmen's pessimistic views. They went right on buying what they needed and even made investments which for them were substantial.

Agencies around Washington keep turning up with evidence that the consumers' needs and desires for housing is one of the most important factors supporting our continued high level of business activity. The Federal Reserve Board has just published the results of a survey in which a scientifically selected sample of consumers was questioned. They discovered that between 1,500,000 and 2,000,000 additional families became home owners in 1948.

But this survey went even further. They asked these people whether they planned to buy or build a house in 1949 and in the following four years—through 1953. They were pleasantly surprised to discover that, on the basis of their findings, there might be a market for as many as 12,000,000 houses in the five years through the end of 1953. On the basis of a very conservative estimate — making no allowance for newly-formed families and leaving out half of those who said they would probably be in the market for a house—they still come out with 7,000,000 houses to be bought in five years. This is just about the 1948 level. Thus, assuming no unfavorable developments that would cause consumers to change their minds, there is every reason to believe that the current level of housing construction will continue for some time to come. The customers are there.

What sort of people are these customers? A very interesting part of this survey answers this question. Of the families who expressed their intention of buying a house, almost two-thirds were earning more than $3,000 a year. Furthermore, most families who buy a house do so when the head of the family is between 25 and 44 years old. Up to age 25 the number builds up. After age 44 it falls off rapidly.

The information derived from this survey points to how the housing boom can be maintained. Housing must be made available to young families (where the family head is less than 44 years old) and must be within their means. Housing designers and housing constructors will be well advised to take this to heart. There is one conclusion: that there is a vast untapped market if housing can be provided to families below the $3,000-per-year income level. It is clear from this survey that people in this group realize they can not afford to buy a house and hence have excluded home buying from their planning.

Depreciation Rates

The recent inflation has upset much planning, including the financial planning of many businesses. The worst difficulties arise in connection with depreciation rates.

Conventional accounting practice requires that depreciation rates be established so that *original* cost of plant and equipment be deducted from earnings of the business during estimated useful life of the plant or equipment. Thus, a piece of equipment worth $10,000 which is expected to last for 10 years is normally depreciated at the rate of $1,000 per year. The underlying theory is that when the capital equipment wears out, there will have been funds enough set aside to replace it. This method generally meets the requirements of the Bureau of Internal Revenue.

Inflation, however, has raised hob with the method. To replace a piece of worn out equipment costs much more today than its original cost. As a result, many companies which followed the best approved depreciation methods found, nevertheless, that when the time came to replace thier equipment, they did not have enough money set aside. They would have to dip into their current profits to get the money.

This point was made very forcefully by several of the steel companies before the President's Fact Finding Board. In explaining what happened to their large profits of recent years, they pointed out that a great part of the earnings was devoted to supplementing their depreciation reserves when they had to replace worn out equipment.

Many businessmen and some economists have been pointing out that this situation means that a portion of the current profits of a business are not profits at all. They must be used to supplement depreciation reserves, or else the capital equipment of the business will deteriorate. That being so, it follows that if a business is to keep up-to-date, it must make a greater profit than was considered reasonable in the past. The only other solution would be for the Bureau of Internal Revenue to revise its regulations so as to permit more liberal depreciation rates. At the moment this seems exceedingly unlikely.

The problem of underdepreciation is quite universal throughout practically all businesses, and it appears to be becoming progressively more serious. When many businesses were making big profits in the immediate postwar years, they could afford to pay taxes and still have enough left over to supplement their depreciation reserves. Now, for many businesses, the going is getting tougher and the comfortable excess is disappearing. If a business can not replace its capital equipment, it is doomed to extinction in the long run.

There is some concern with this problem in Washington but no disposition yet to take it very seriously. Curiously enough, the attack may have to come outside of government entirely. It may have to be directed against the accounting profession. By training, that profession is very conservative. Any change from the method of depreciation based on original cost would require a revision of the basic concepts of accounting practice.

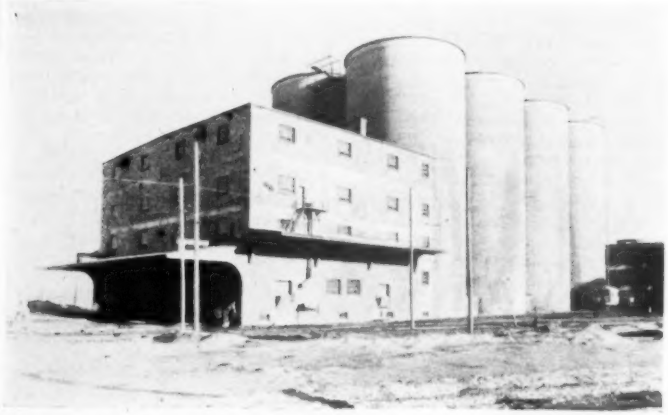
Fact-Finding Inconsistencies

The final outcome of the labor dispute in the steel industry may determine the economic fate of the nation. It is interesting, therefore, to observe the arguments used and the conclusions reached in the so-

(*Continued on page* 102)

Canada Cement EXPANDS BELLEVILLE PLANT

General view of Canada Cement Company's Belleville, Ont., plant viewed from the quarry. At the left is the new primary crusher building in the quarry, with the belt conveyor to plant.



The new cement storage silos and packhouse built in 1946 as a part of a program of improving this department in most of the company's plants.

By H. B. HOWE
Chief Engineer
Canada Cement Company

another P-Q exclusive

AN INTERESTING construction job has been completed at Canada Cement Company's plant No. 5, Belleville, Ont., Canada, doubling the capacity of the plant without interference with plant operations, and yet interlocking with them. When the plant was converted from dry to wet process in 1935, the result was a well balanced plant; therefore when expansion was contemplated, it was necessary to expand all departments equally, with the exception of the crushing department and the packing department, mention of which will be made later.

Some appreciation of the complexities of the job may be had by referring to the simplified plan of the plant on which the new construction is shown in heavy lines. The flow-sheet shows the entire plant incorporating equipment for both kilns.

The 42-in. Allis-Chalmers gyratory crusher was the primary crushing unit, and had adequate capacity, but its location in the plant was not favorable for such extended operations. Therefore it was moved down to the bottom of the quarry and placed in a pit so that the top of it is approximately at quarry floor level. The stone is brought to it by KR 11 International trucks, hauling Easton TR-13 trailers using side-dump discharge.

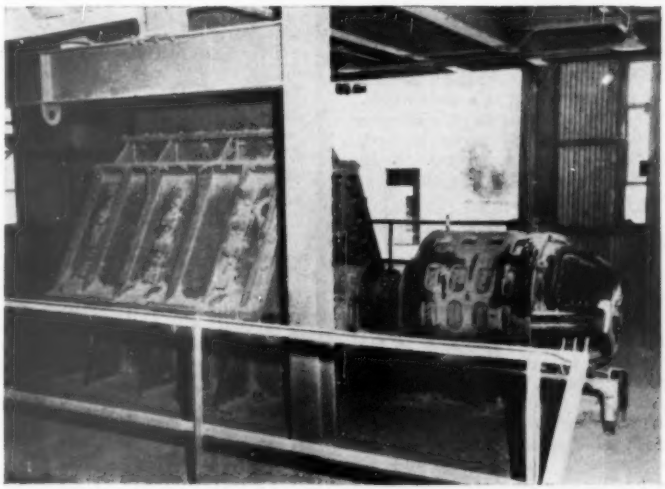
The problem of moving this crusher without shutting down the plant was a serious one, and by storing fine stone in the yard of the plant in advance, it was possible to relieve this machine for a sufficient length of time to move it. The moving entailed dismantling of the crusher in its old location, moving it out of the way, moving the overhead crane, rebuilding the crane in the new location, and then rebuilding the crusher. The entire job took 21 days on a 24-hour-per-day basis, and went without a hitch all the way through.

The 6-in. product of the 42-in. gyratory crusher is carried away on a 42-in. belt conveyor, about 435-ft. horizontal centers, up to the top of a surge bin. The stone from the surge bin feeds to a 54-in. pan conveyor which drops it about 8 feet above the mouth of a CF15-50 Pennsylvania Impactor, driven by a 450-hp., 720 r.p.m. wound rotor motor. This is a large swing-hammer type crusher without grate bars to control the top size, having a net capacity of 375 t.p.h. The product is conveyed by belt conveyor to two 60-in. by 12-ft. Dillon screens, which separate about 100 t.p.h. of plus-½-in. material to return it to the Impactor for recrushing. The fines are carried on out to the open stone storage. A product of minus-½-in. stone is expected as feed for all raw grinding units.

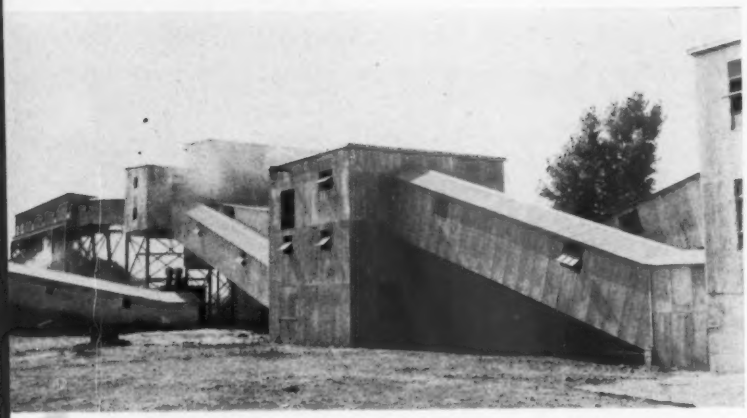
Fed from the secondary stone bins as well, are three No. 7½ Allis-Chalmers gyratory crushers. These crush rock for ballast purposes, and for coarse stone to store during winter months. These were not disturbed during the reconstruction. The coarse stone when put out to the storage, handles very well in winter months, and is recrushed by a GC-11 Pennsylvania hammermill,

The 42-in. gyratory primary crusher in the quarry with overhead crane and dumping mechanism for trailer trucks, one of which is in foreground.

"Operations as usual" prevailed as construction was carried out to double production capacity



The new swing-hammer-type secondary crusher which reduces 6-in. stone to ½-in.-minus at rate of 375 t.p.h. At right is 450-hp., 720-r.p.m. motor.



The secondary crusher and screening building with ballast screening building and open stone storage in background.

which was converted to a high drop reversible type a few years ago.

The product from the GC-11 hammermill, or fine stone when such is drawn from a storage, is carried by a 36-in. belt conveyor to the bins in the raw department. Two of these bins feed 10-ft. by 48-in. Hardinge mills, driven by 350 hp., 900 r.p.m. motors in closed circuit with Hummer vibrating screens. These mills were installed some years ago. The product of the Hardinge mill screens passes into a parabolic trough and thence into four Vickers tube mills, three of which were installed in 1935, and the fourth in 1947. These are 7 ft. in diameter by 26 ft. long, being two-compartment tube mills, driven by 550 hp., 180 r.p.m. supersynchronous Canadian General Electric motors.

The third stone bin supplies stone to a table feeder for a new No. 2039 F.L. Smidth Unidan mill, 7 ft. in diameter by 39 ft. long. This is a three-compartment mill, powered by a 600 hp., 180 r.p.m. synchronous motor, and makes minus 90-mesh slurry on one pass in open circuit grinding. The total ball charge in this mill is 99,000 lbs.

The product of all mills goes into a sump, from which it is pumped by 6-in. Wilfley pumps to any of six new reinforced concrete slurry silos, 25 ft. in diameter by 60 ft. high, having a capacity of 30,000 cu. ft. of slurry. These slurry silos are so arranged that the individual run-out pipes may dump into a blending sump from which 8-in. Wilfley pumps may pump it back to any of the six silos again. This method is used for blending parts of two or more silos to obtain the correct kiln mix.

When a silo contains the proper kiln mix, the same run-out pipes are used in a different fashion to transfer the slurry to the sump of another series of 6-in. Wilfley pumps, which may be used to pump the slurry direct to the kiln feeders, or into the old rectangular slurry storage basin.

To provide the additional clay washing capacity, a second 26-ft. F.L. Smidth wash mill was installed along the same track on which the clay cars were previously handled. Since it was a duplicate of the No. 1 wash mill, there was nothing new in this unit. Clay slip from the clay storage basin is fed by a feeder, to the various grinding units in the raw department

The only space in the plant left for a kiln was between the No. 1 kiln and the quarry crest. Actually it had to pass through an old stone storage, which was demolished as soon as the new stone storage was in operation. This building was salvaged for a section of the new kiln building.

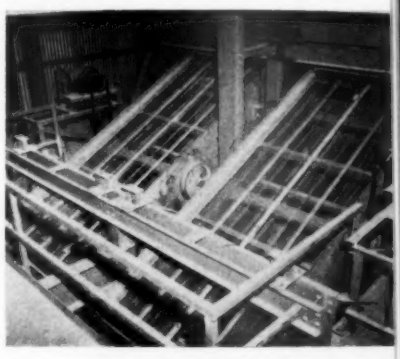
The kiln was, as nearly as possible, a duplicate of kiln No. 1, in order to economize on spare parts that would be required to assure continuous operation. The kiln is of F.L. Smidth design, all welded, 11 ft. 3 in. by 10 ft. by 11 ft. 3 in. by 455 ft., equipped with a Unax grate type cooler. It has six supporting tires. All support roller bearings, as well as thrust roller bearings, are antifriction. It is equipped with a dense type chain system, and has the usual refractory, with the exception that the burning zone is lined with Magnecon refractory of the Canadian Refractories, Ltd. This basic refractory is standard practice with the Canada Cement Company. Production rate for this kiln when carrying a rear-end temperature of 500 deg. to 520 deg. F. is about 3,500 bbls. per day. The definite production and economy will not be known till a long-term production test is made, but it is expected the heat rate will be about 950,000 B.t.u.'s per bbl.

The kiln drive consists of a d.-c. motor, 100 to 150 hp., 300 to 900 r.p.m., coupled direct to a Dominion gear reducer DR-22, ratio 27.47 to 1, which in turn is coupled to the secondary gear box incorporated in the guard casing of the drive of the kiln. The overall ratio in the secondary gear box and the kiln girth gear is 26.7 to 1. The slurry feeder alternator is a 7½ kv.-a. unit, connected in tandem with the kiln drive motor.

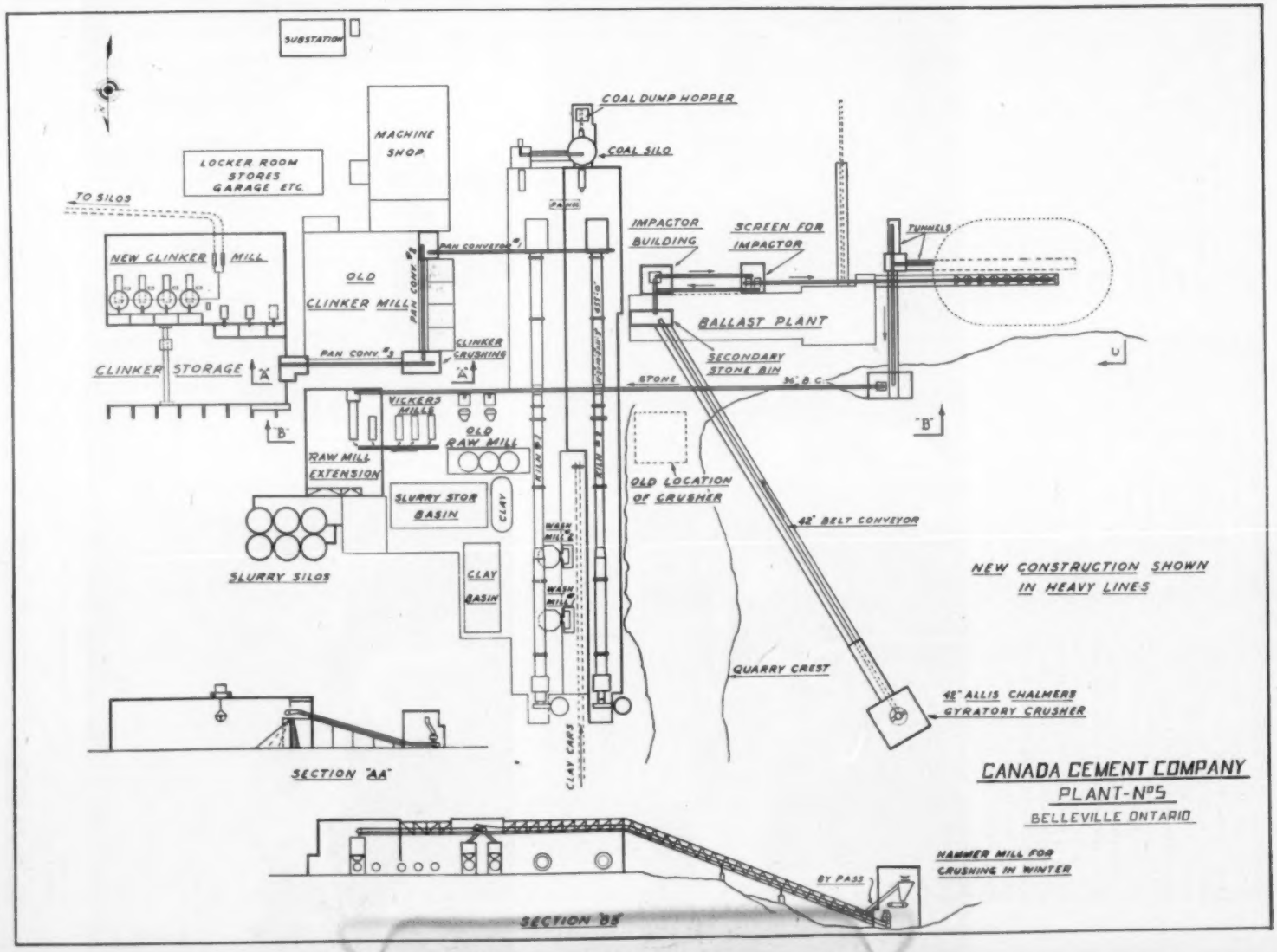
A further complication in the slurry system was encountered, since a slurry overflow tank and return pump was necessary to pump the overflow back to the slurry storage. A 4-in. Wilfley pump is sufficient to keep ahead of the slurry normally, and a 6-in. Wilfley pump is provided as a high-capacity standby when required. The system is covered by high-level alarms and overflow.

A No. 48 F.L.S. induced draft fan running at constant speed provides draft controlled by a louvre damper. The fan discharges directly into a 10-ft. by 125-ft. Custodis reinforced concrete chimney, which is unique in that it is unlined and was constructed of Kalicrete concrete, using the sulphate-resisting cement produced by the company. The slurry feeder is a ferris wheel type.

To provide coal for the new kiln, a silo was constructed by the moving form method, 28-ft. inside diameter by 66-ft. high, having a capacity of 350 tons. A ledge was left in the wall at a suitable elevation, on which to rest a conical steel bottom. This was inserted after completion of concrete work and completely welded in place. Coal is transported from



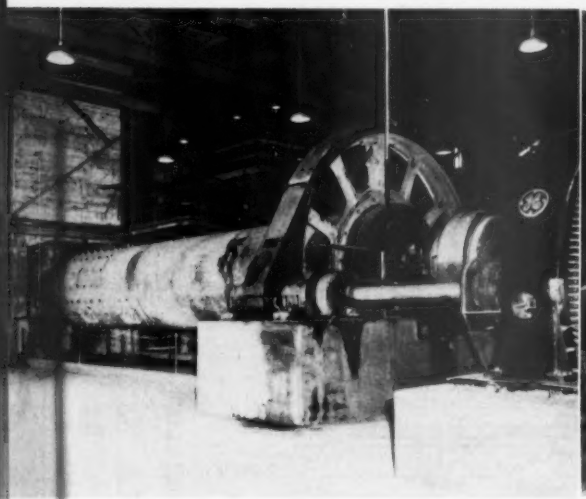
The two 5- by 12-ft. screens, which scalp oversize back to secondary crusher.

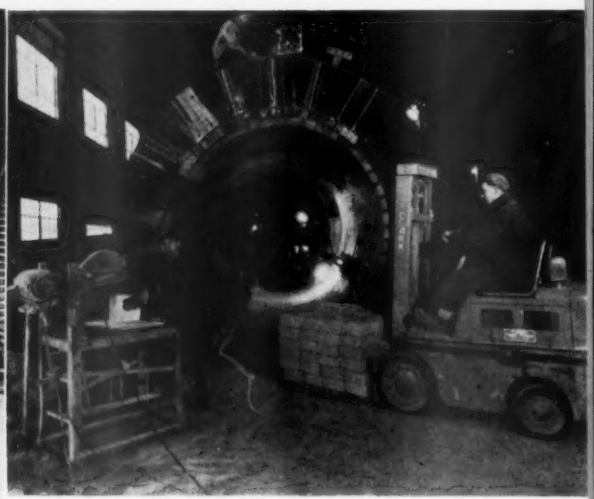

SUBSTATION
MACHINE SHOP
LOCKER ROOM STORES GARAGE ETC.
COAL DUMP HOPPER
COAL SILO
TO SILOS
NEW CLINKER MILL
OLD CLINKER MILL
PAN CONVEYOR #1
PAN CONV #2
PAN CONV #3
CLINKER CRUSHING
CLINKER STORAGE
IMPACTOR BUILDING
SCREEN FOR IMPACTOR
TUNNELS
BALLAST PLANT
SECONDARY STONE BIN
STONE
36" B.C.
VICKERS MILLS
OLD RAW MILL
RAW MILL EXTENSION
SLURRY STOR BASIN
CLAY
SLURRY SILOS
CLAY BASIN
WASH MILL #2
WASH MILL #1
KILN #1
KILN #2
OLD LOCATION OF CRUSHER
42" BELT CONVEYOR
NEW CONSTRUCTION SHOWN IN HEAVY LINES
QUARRY CREST
42" ALLIS CHALMERS GYRATORY CRUSHER
SECTION "AA"
CLAY CARS
CANADA CEMENT COMPANY
PLANT-No5
BELLEVILLE ONTARIO
HAMMER MILL FOR CRUSHING IN WINTER
BY PASS
SECTION "BB"

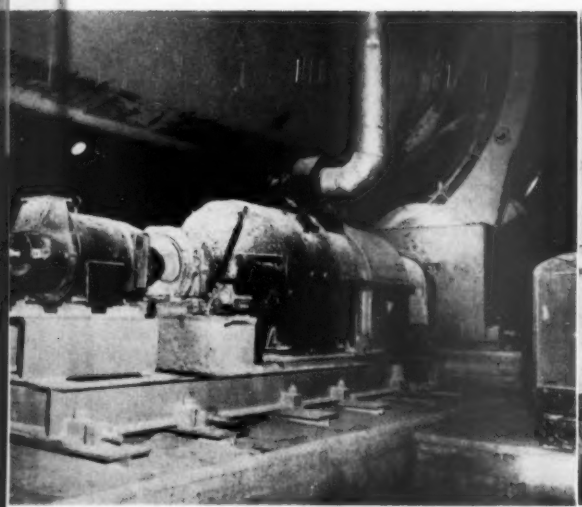
the dock by trucks which dump into a "non-arching" hopper, and is fed by an apron feeder to an elevator carrying it to the top of the silo, where it is conveyed by belts to either new or old coal bins.

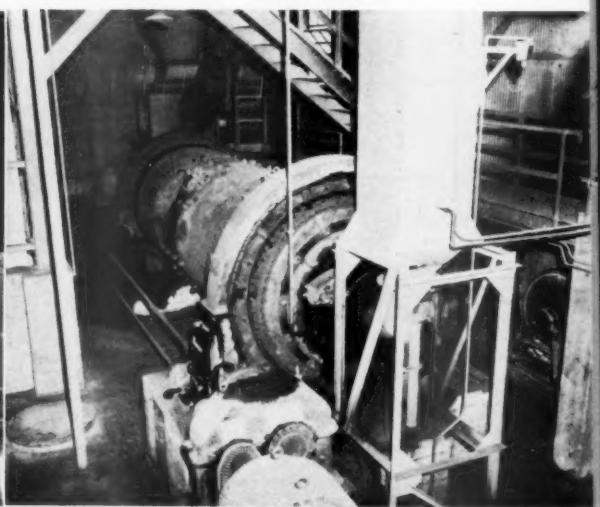
The coal pulverizer for kiln No. 2 is an F.L. Smidth Tirax mill, 6-ft. in diameter by 23-ft. long, having a drying compartment in the feed end, 9-ft. 6-in. long. This mill was not identical with kiln No. 1 Tirax coal mill in that the diameter is larger to provide lower air velocities, giving an improvement in fineness and drying ability. The feeder is a table-type feeder, totally enclosed, surrounded by hot air drawn from the top of the cooler mantle. The coal fan is located between the coal mill and the blast pipe of the kiln, taking its suction from the top of a stand pipe, immediately at the discharge end of the coal mill. This stand pipe settles out the coarse particles of coal.

The kiln is controlled by an F.L. Smidth centralized kiln control panel, which contains the control for the slurry feeder, induced draft fan, louvre damper, kiln motor, kiln motor cooling fan, primary cooler fan, coal fan, coal mill and coal feeder. Recording instruments are provided for the feed and discharge end draft, coal mill differential pressure, kiln shell thermocouple at the discharge end of the chains, the rear end temperature, primary and secondary air temperatures, hot air temperature into the coal mill, and coal pipe temperature. High-temperature alarms operated by the pyrometers are provided for excessive coal pipe temperature. Pressure recorders are Hays and the pyrometers are L & N Micromax. An oxygen analyzer is now under trial test







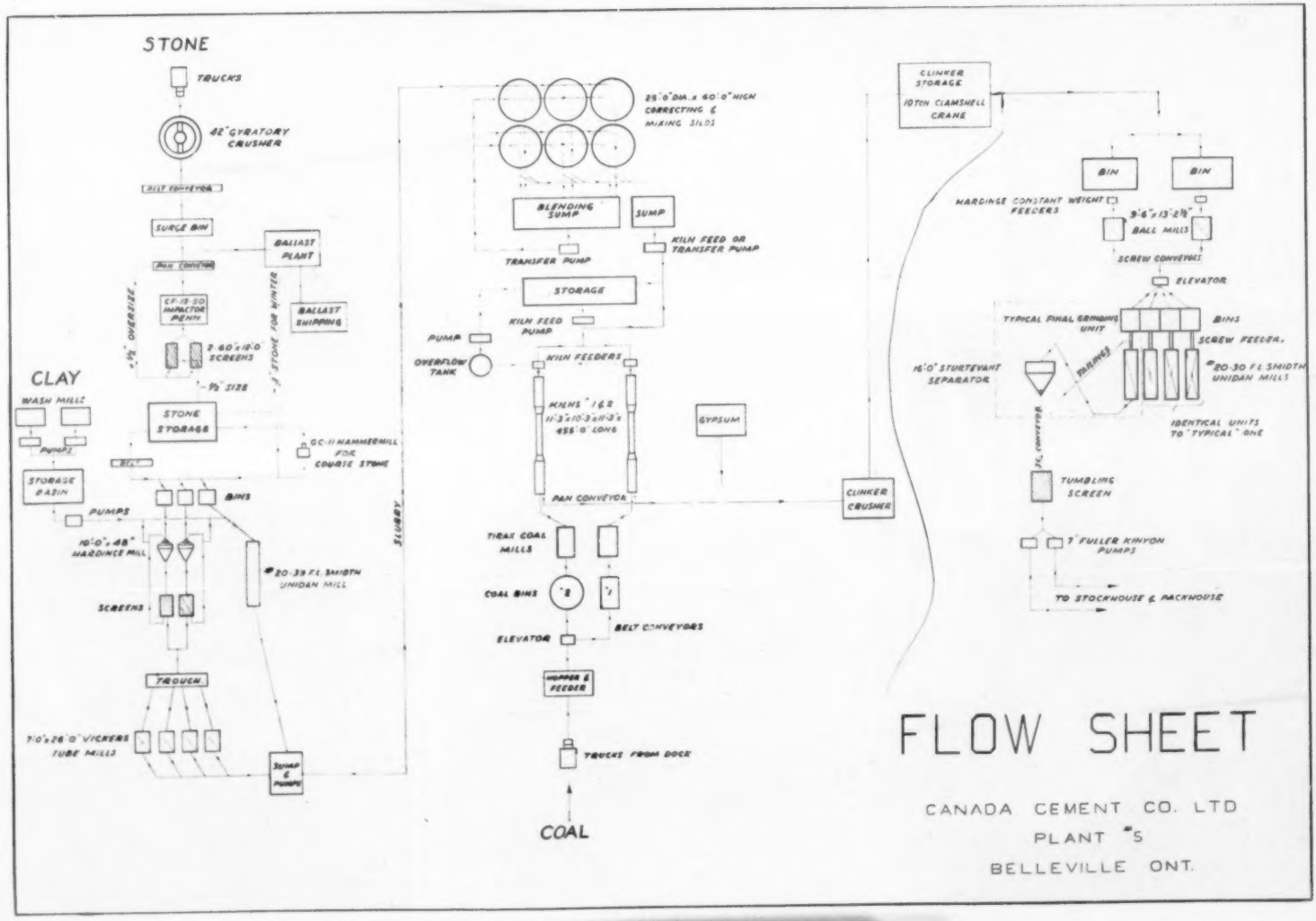


Top, left: The new 7- by 39-ft. 3-compartment mill which has been added for final raw grinding.

Top, right: Lining of the new kiln in progress with a load of refractories on the lift truck and a portable saw at the left.

Bottom, left: The motor and gear reducer drive of new Kiln No. 2 with the motor cooling fan and vent above.

Bottom, right: The new 6- by 23-ft. coal grinding and drying mill which serves Kiln No. 2, with table feeder.

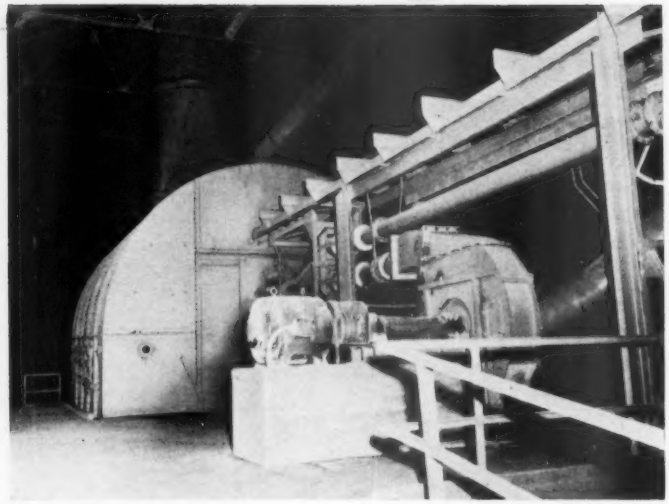


FLOW SHEET

CANADA CEMENT CO. LTD

PLANT "5"

BELLEVILLE ONT.



The hood and firing end of Kiln No. 2 with fan and coal feed pipe.

and will prove an excellent assistance in the burning of the kiln. A further provision is an alarm horn and a "trouble" indicating light system, so that an immediate indication is made of failure of any of the operating motors on the kiln or kiln auxiliaries.

A fixed bucket-type pan conveyor is used to convey the clinker to the storage. Actually three different runs of conveyor, made necessary by the layout in the plant, operate at about 35 f.p.m., and in the past have proven very satisfactory for hot material. The clinker in transferring from pan conveyor No. 2 to pan conveyor No. 3 passes through the 4-ft. short-head Symons cone crusher, where it is reduced in size to minus-½-in. or better. Gypsum is added to the clinker on pan conveyor No. 1.

The open clinker storage is 80 by 176-ft. in size and has reinforced concrete retaining walls. It is serviced by a 10-ton clamshell crane, made by the Provincial Engineering Company. This crane is used to transfer the clinker for cooling, and also fills the bins which feed the ball mills in the clinker mill.

The new clinker mill was constructed to take care of the product of both kilns, thereby making obsolete the old mill. It has a two-stage grinding system with air separators, in closed circuit with the finishing tube mills. Space was provided for three ball mills, but two only will be installed at this time. Each ball mill provides feed for two of the tube mills.

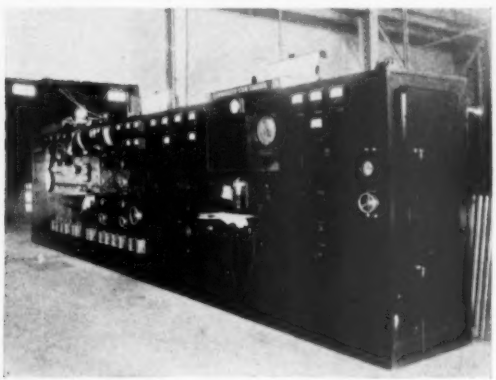
The clinker from the bins over the ball mills is fed by size C Hardinge constant-weight feeders into the F.L. Smidth ball mills, which are 9-ft. 6-in. in diameter by 13-ft. long, driven by 500-hp. 180 r.p.m., synchronous motors. The total ball charge is 68,000 lbs. The product from the ball mills is conveyed by screw conveyor into an elevator, thence into the bins for the finish grind Unidan mills.

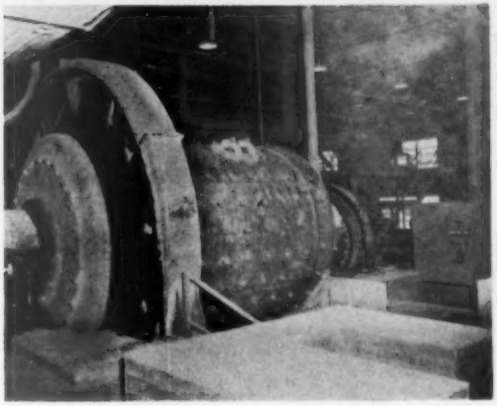
These are 2030 F.L. Smidth Unidans, 7-ft. in diameter by 30-ft. long. Each is powered by a 600 hp., 180 r.p.m. synchronous-type motor. The total ball charge is 99,000 lbs. Each Unidan has its own 16-ft. Sturtevant air separator, with tailings going back to the feed of the mill. The feeders for these Unidan mills are of the screw type in a close fitting sleeve, having flights half normal pitch to prevent flushing. They are driven by a variable speed a.-c. motor, manually controlled by a rheostat.

The product of the air separators, which is finished cement, passes by a screw conveyor through a tumbling screen, and thence to two 7-in. Fuller-Kinyon pumps, to transport it through 6-in. pipelines to the stockhouse. One or both pumps may be

Below: The combined kiln control panel with controls for Kiln No. 1 at the left and Kiln No. 2 at the right.

Right: Pan conveyor No. 3, which carries the clinker and gypsum from the 4-ft. cone crusher to the storage.





used as required. Each has its own C-200 Fuller rotary air compressor.

Sly dust filters are connected to all dust-producing points, and have proved quite successful in keeping the clinker mill free of dust.

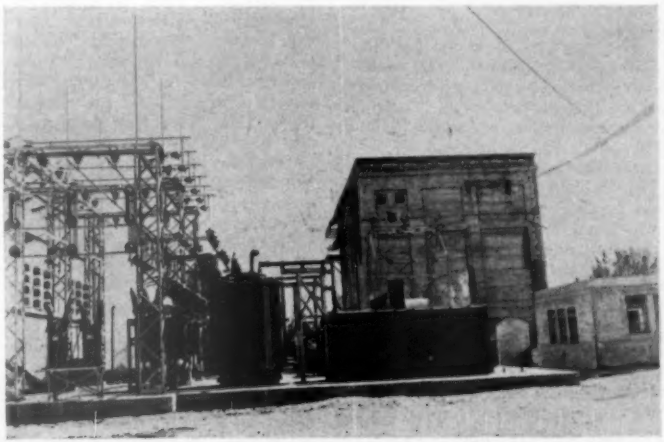
In 1946 a new stockhouse and packhouse consisting of eight 50-ft. diameter by 100 ft. high silos was constructed in contemplation of possible plant enlargement. Screw conveyors draw the cement from these silos, conveying it by elevator to the packhouse in three separate systems, to feed four St. Regis four-tube packing machines No. 111 FC. The three systems are able to convey three different kinds of cement without contamination. Shuttle conveyors in the packhouse handle the bags for truck loading, and transfer conveyors convey the bags for loading into railway cars. Screw conveyors are provided for loading bulk trucks or bulk cars as occasion demands.

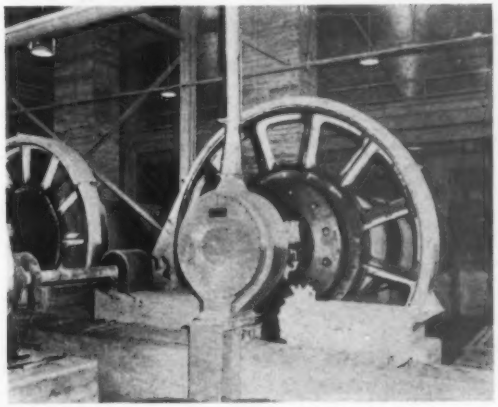
Additional water supply was required, and this opportunity was taken to renovate the pump house. Two new Canadian Ingersoll-Rand

Left: The clinker section of the storage building with the 80-ft. span overhead crane. Mill bins are at the left.

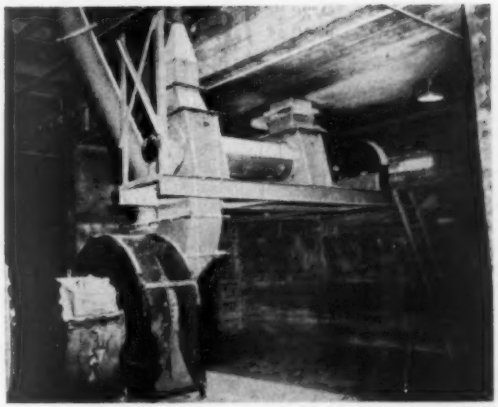
Right: One of the two 9½- by 13-ft. ball mills used for preliminary clinker grinding.

Below: The plant substation with cubicles housing the secondary circuit breakers.





Two of the four 7- by 30-ft. mills used for final clinker grinding, with separators in background.



The screen-type feeders used on finish clinker grinding mills. They are driven by variable-speed motors.

6-in. pumps were installed with a 3-in. stand-by gasoline-driven pump for use in case of fire or power failure. The pumping system also supplies a small village near the plant. The water source is Lake Ontario through the Bay of Quinte.

When planning the plant extension, it was evident very early that a new sub-station was required to (a) take care of the additional load of the new plant, (b) take care of the new large 2200-volt load, (c) to replace an obsolete sub-station. A Canadian General Electric "Package" substation of 10,000-kv.-a. capacity was purchased. This is a completely outdoor metal-clad substation, controlled by a panel in a control house nearby.

The primary 44000-volt structure consists of primary disconnects, bus metering equipment, lighting arresters, and primary oil circuit breakers. These primary breakers are 600 amps, solenoid operated, with an interrupting capacity of 500,000 kv.-a.

The two transformers are the 5000 kv.-a., 44000/2300 volts, three-phase, 60-cycle, oil-insulated, self-cooled, outdoor type. Each is connected directly to its own 2300-volt metal-clad switchgear section, which distributes to various mill circuits through Magna-blast air circuit breakers. Each breaker is 600-amp capacity, solenoid operated, with an interrupting capacity of 100,000 kv.-a. The two 2300-volt buses can be tied together in case of a transformer failure. All outgoing feeders are three conductor P.I.L.C. cables.

Located in the various departments are load centers to reduce to 550 volts for small loads, amounting to about one-third of total load. These are unit load centers having Ferranti transformers and I.T.E. air circuit breakers on the 550-volt feeders.

The motors on the large grinding units are 2200-volt Canadian General Electric synchronous, arranged with two-stage starting. Starters used are Canadian General Electric Limit-amp starters with air-break line contractors. On pressing the "start" button, the first contactor closes, energizing one-half of the stator winding. Automatically by a time relay, the second contactor closes, energizing the second half of the stator winding, and the motor comes up to speed. The d.-c. field is brought in by a field application relay. Being fully automatic, the miller can start his own machines.

Construction of the new plant started in the latter days of January, 1948, and the kiln was placed in full continuous operation on March 29, 1949. The clinker conveying system and the clinker mill were finally ready to take the product of the kilns on May 1, 1949, with exception of two of the Unidan mills, which will be ready for operation in October, 1949. During this last period the product of one ball mill is being carried by temporary conveyor to the old clinker mill, and the old finish grinding units complete the grind.

The engineering layout and detail was worked out by Canada Cement Company engineers, the construction was handled by the Carter Construction Company of Toronto, and the electrical construction work was done by the Canadian Comstock Company of Toronto. We would like to acknowledge that the full co-operation of all suppliers and contractors made possible the reconstruction of this plant in such short time.

Pacific Coast Aggregates

(*From page 84*)

into operation. This is expected to be accomplished in the minimum of time, since the equipment is on hand and the structural work is practically finished. The surge pile of 2½-in. plus material will feed, via tunnel belt, the new department. Secondary breakage will be accomplished by a bank of four Allis-Chalmers Type R crushers. These will include a No. 636, a No. 436, a No. 222, and two No. 322 machines. Low-Head 4- by 14-ft. screens will separate the product for stacking into two surge piles, one storing ½-to-1½-in. material (5,000 tons' live storage); the other No. 8 to ½-in. (4,000 tons' live storage). These piles will supply the sizing screens above the bunkers. Some of the crusher dust may eventually find its way to the wet sand classifiers to increase the sand supply on the sand-and-gravel side.

Much of the planning for the new Eliot plant, in design and execution, was done by the P.C.A. engineering department, headed by Chief Engineer George F. Hampton, in cooperation with the Conveyor Company, Los Angeles. Steel was fabricated and erected by the Consolidated Western Steel Corporation, and the electrical work was done under a separate contract.

D. A. Gildersleeve, veteran superintendent of Plant No. 103, has assumed similar duties in managing production at the new operation.

Mrs. Saner Heads Concern Established by Husband

Mrs. O. B. Saner of Kerrville, Tex., was elected president of Oak Ridge Minerals, Inc., a silica producing company located at Rogers, Ark. She succeeds her husband as head of the firm. Mr. Saner, who founded the concern about two years ago, died last July.

Construction of the firm's plant has been slowed by the difficulty in obtaining equipment and machinery. Mr. Saner and associates began setting up the facilities after the discovery of a large deposit of white amorphous silica six miles east of Rogers.

• One of the separate interlocking switchboards which control the equipment in flow-sheet order.

Figure A.

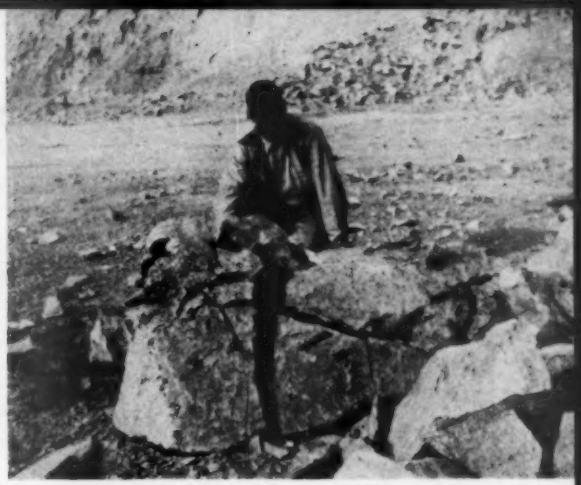


Figure AA.

Shaped Charge Demonstration A Success

ON August 26 and September 17, 1949, a new method of secondary blasting for the reduction of boulders to crusher size was demonstrated by its inventor, Laud S. Byers, at the Logan quarry of Granite Rock Company of Watsonville, California.

This method consisted of placing a packaged charge of explosive upon boulders without mud-capping or artificial covering of any kind. The majority of the boulders, estimated to weigh from 1½ tons to approximately 20 tons each, were broken to 100 percent crusher size at the first blow, with a noticeable absence of fines. The crusher size tonnage produced ranged as high as 2.05 tons of rock to the pound of explosive used. There was a noticeable absence of flying fragments, and the breakage was left lying within a comparatively small area in the original position of the boulder.

It was explained that this unusual blasting effect was initiated within the package, or container, by use of apexes or planes so designed as to produce a plurality of explosive jets which created both a penetrating and ripping effect at their point of convergence.

The rock at this quarry is a hard, tough granite, and mud-capping the boulders for secondary breakage has been the method used.

The accompanying photographs show the usage of both the aluminum and molded paper pulp containers employed. Figure A shows a 1½-lb. molded - paper - pulp shaped charge placed upon a boulder weighing about 1½ tons. Figure AA shows the resultant breakage.

Figure B shows a very compact

Figure B.

Figure BB.

Figure C.

boulder weighing about 4.1 tons, on which a 2-lb. charge in an aluminum container was placed, with resultant breakage shown in Figure BB.

Figure C shows a boulder weighing approximately 6 tons, on which a 6-lb. charge in the aluminum container was placed, with the result shown in Figure CC.

Six other shots with highly satisfactory results were made on this date (August 26), and it was decided to make further tests on still larger boulders provided that a primary shot, then pending, brought down larger ones.

Figure CC.

Figure D.

On September 17 observers were invited to witness a demonstration of the new shaped charge on the largest boulder on the quarry floor, which was estimated at appoximately 19.6 tons in weight. Two charges of 6 lbs. each were placed upon this boulder and fired simultaneously. The position of these charges can be seen in Figure D, showing the north side of the boulder, which measured an average 10 ft. long, 4¼ ft. wide and 5 ft. thick. Figure DD is a view of the south side of the boulder, with its maximum thickness of nearly 6 feet clearly shown. One of the two charges used can be seen directly over this thickest portion.

Figure DDD shows the same south side after the blast, where the observer is standing at the original point of greatest thickness. The reduction was so complete that not a fragment too big to go through the quarry's crusher remained of the 20 ton boulder, and the smallest pieces observed approximated 4 in.

Measurements and estimation of weights of boulders blasted were supervised by Plant Superintendent H. L. Purtill prior to the shots, which were exploded by the conventional No. 6 blasting cap.

The advantages of the types of shaped charge containers used were explained, *viz:* that the molded paper pulp containers were completely disintegrated by the force of explosion, whereas the aluminum afforded a readily-oxidizable metal from the heat of explosion, thereby eliminat-

(*Continued on page* 102)

Figure DD.

Figure DDD.

The Multiple-Jet Shaped Blasting Charge — Why It Functions

By LAUD S. BYERS
Explosives Engineer

another P and Q exclusive

EVER since the American "Bazooka," the British "Piat Bomb," the "Bee-hive" and other similar military weapons using the shaped-charge principle during the last War produced piercing power against tank-armor and military objects that appeared not only revolutionary but even fantastic, industrial explosives users have continued to wonder why the same principle could not be modified and utilized in mining, quarrying and general engineering operations. It appeared obvious that, were this possible, a very substantial reduction in the consumption of explosives, and in time and expense, might easily be achieved.

The question naturally presented itself as to who would conduct and complete this research. The mining industry could not be expected to divert its activities into a new field and engage in costly research and experimentation requiring chemists, explosives, engineers and practical rock men working in collaboration

Laud S. Byers
Explosives engineer

in the hope of ultimate benefit. At the same time it was evident that a successful conclusion would be a great boon to the industry, with common benefits to all.

In the case of quarrying alone, and the ever-increasing need of the nation for rock and stone, any economies reducing their cost should increase their demand. In secondary blasting some large quarries have as many as hundreds of boulders that must be broken each day, and the overall cost is a real, major item. The better and quicker the reduction of these boulders on the quarry floor, the less the reduction performed in the crushers, and the saving is obvious.

It is known that various efforts have been made since World War II to use shaped charges for industrial purposes, but numerous "unknowns" in their military modification were always encountered; and in the end most of these efforts have been abandoned.

In the baffling period now behind the writer and his associates, the search for this modification and utilization for industrial purposes has required a long, costly and patient effort. Many new principles had to be discovered and problems solved. Many elusive factors had to be found and reconciled, such as the shape of the cavity, its depth, diameter and height in relationship to the surface area presented to the object to be blasted, etc. The type of explosive itself was found to be of much importance, requiring a particular valance with reference to velocity, initial striking power and gas volume. The most suitable material for the shaped charge container had to be experimented with —sheet-iron, steel, copper, aluminum and other metals, as well as nonmetallic substances such as plastics, fabrics, cloth, paper, molded paper pulp and the like. All of these variables had to be correlated and tested with the end in view that the operator or industrial explosives user would be able to purchase the shaped blasting charge at a price consistent with the results and advantages he would receive.

It was recognized, in the correlations of the numerous variables found, that a new shape being experimented with might both penetrate and rupture steel plate but would not completely reduce a rock boulder. In the seeking and development of side jets, however, steel plate was found actually to register the ripping jets better than any other

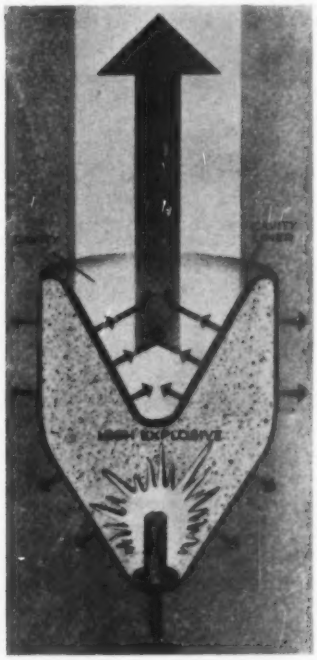


Figure 1

Figure 2

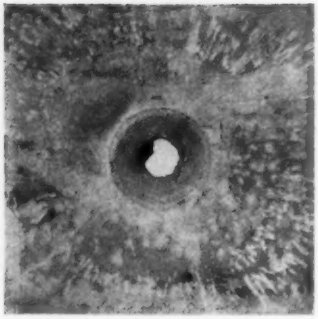


Figure 3

material. As any plate that was not identical to its predecessor might show misleading results, each plate had to be of the same material and the same thickness and shot under identical conditions. Because of this need of uniformity, it was necessary to purchase new steel plate in large dimensions, and then cut it into small squares of equal size.

If the effect on the steel plate looked encouraging, the next step was to find out the effect of the same shape and same explosive filler on boulders and thus be able to study the shaped charge at actual work. A large field of unaltered granite boulders happened to be on a hillside a few miles away. They were much harder than any boulders expected to be encountered in commercial operations. Innumerable times these boulders were merely "spaulled" and not even cracked, and the work had to start all over again. Not knowing whether the shape was right and the explosive wrong, or *vice versa*, literally hundreds of steel plates were shot and numerous trips were made to the practical testing grounds before the shape in question was abandoned and a new one tried. It is understandable that the cost of this long period of trial and error together with the destruction of materials gradually mounted into tens of thousands of dollars before the "missing link" was discovered.

Now that a practical and economical shaped blasting charge has finally been developed for industry's use, an explanation of the technical problems involved and the way in which these problems were solved might be of interest.

Figure 1 shows a cross-section of the conical-jet shaped charge which has been the starting point of post-war efforts to adapt this principle to industrial purposes. It will be noted that the cavity liner is made of heavy material which concentrates into a metallic jet of enormous punching power. Figure 2 shows a picture of the jet itself. It might be roughly estimated that 70 percent of the expolsive energy is concentrated in this directed, single stream of explosive force, producing a perforating action on an object such as steel plate, shown in Figure 3. In our efforts to follow this principle, much valuable time was lost, as it was found that any cavity having a sharp apex would not only produce merely a perforating action but would require a fixed "stand-off" distance in order to do even that. It was finally recognized that if this penetrating jet could be started into the object and then suddenly interrupted by "side-jets" of high velocity, the object, such as a boulder, would be ripped apart instead of being merely penetrated with a hole.

Figure 4

In attempting to accomplish this results, a long series of various cavity shapes were experimented with and discarded, such as conical, hemispherical, elliptical and variations of them all. The yardstick used for comparative purposes at all times was an unshaped charge of equivalent equal weight, an equal object to be blasted, and equal conditions. Figure 4 shows the explosion of the unshaped charge. in which the wastage of valuable expansive gases, or work energy, is clearly noted. Figure 5 shows the bending but not shattering effect of the unshaped charge on steel plate.

The proper cavity shape, container shape and explosive filler and the balanced correlation of each to the other has been finally found. The cavity itself is shown in Figure 6, the container being fashioned of molded paper pulp. Figure 7 shows

The preceding report and the following article give the first information on the adaptation of an important wartime development to practical peacetime use. The methods described and the results obtained with this new blasting method promise to revise existing concepts of secondary blasting methods.

Laud Byers, whose untiring efforts led to the results described in these articles, has made a profession of high explosives for special purposes for many years. Large quantities of explosives of his design have been used by the U. S. Army Engineers and on various public projects such as the All-American Canal, etc.

Prior to the last war, he experimented with the cutting down of trees by shaped blasting charges in which he developed a flat, knife-like cutting jet instead of a circular boring jet such as was used later in military weapons. Some of his patent applications on special explosives were impounded by the Government during the war under an Order of Secrecy, which was released after the surrender of Germany.

The week following the Pearl Harbor disaster, Mr. Byers was entrusted with the supervision and production of the incendiary bombs dropped on Japan by General Doolittle, which were the first bombs of their type manufactured in the United States. For the successful production of these bombs (54,000 within 15 days) he and his workers were awarded the gold Navy "E," the Army and Navy "E" as well as special congratulatory mention from the Chief of the Chemical Warfare Service.

During the war period Mr. Byers was asked to take charge of and manage two other war plant operations, the largest being at Cordova, Tenn., for the filling and loading of incendiary bombs on a large scale.

Following the release of his impounded formulae, the International Explosives Corporation was formed in Nevada, and an existing plant which was free of wartime contracts was leased as a research plant. Several years were devoted to research and testing of the explosives, but actual production was not started because of the fact that post-war restrictions on raw materials, particularly nitrates, were still in force. The International Emergency Food Control Council used 1941 as the year on which to base their allotment quotes and, of course, Mr. Byers was not manufacturing explosives privately at that time, due to his commitments in behalf of the war effort.

In August, 1947, it became apparent that the raw material situation would not immediately be improved sufficiently to warrant a manufacturing project; so Mr. Byers was advised to take a much-needed rest. He remained as president of International Explosives Corporation until May, 1949, at which time he elected to devote his time exclusively to the shaped blasting charge while the International Explosives Corporation awaited the relaxing of controls of raw materials, which is now in sight.

Albert Silver, nationally known metallurgist, and Warren B. Richardson, formerly with Chemical Warfare Service, both associated with International Explosives Corporation, collaborated with Mr. Byers in the adaptation of special explosives necessary to the unusual performance of the shaped blasting charge. The moral and financial support of John P. Thatcher, W. V. Richardson and Mervin L. Gardner were of great help during the long period of experimentation.

Mr. Byers will be glad to answer any inquiries arising from these articles if addressed to him at Box 2776, Carmel, Calif.

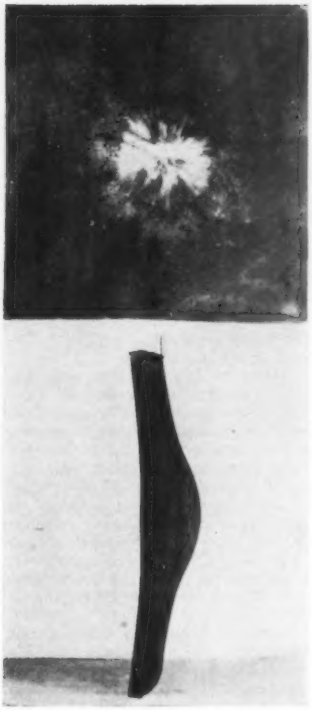


Figure 5

the same in aluminum, which oxidizes in the heat of explosion, thus eliminating the throwing of small, dangerous missiles. The action of this shaped charge shown produces a tri-jet or "multiple-jet". The top apex, being closest to the business end of the blasting cap, collapses first, starting its downward jet in the direction of the object to be blasted, such as a rock boulder. This is followed by the collapse of the side apexes with their own direc-

Figure 8

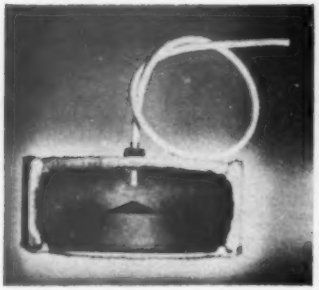


Figure 6

tional flow of concentrated energy, which upset or dephase the initial jet which has already started its boring effect into the boulder. The direction of this boring effect, which has already served its purpose for entry into the boulder, is interrupted by the meeting of the dephasing or secondary jets having a different direction of flow, and at this common meeting point a violent disturbance occurs. The firing rate or velocity of the explosive has been correlated with the collapsing of the apexes. The concentrated blast effect not only continues downward but sidewise as well, which produces the tendency to rip the boulder apart.

The violence at this common meeting point of the jets is clearly shown in Figure 8. At this point of meeting, the velocity created by the convergence of the jets has become several times that of the normal velocity of the explosive filler itself. It will be observed that the burst of energy moves forward and outward with a terrific momentum, whereas the backward reaction is comparatively weak. It has been estimated that as high as 85 percent of the original available energy of the explosive force is delivered at this point of burst. A hole has been bored into the boulder similar to block-holing or punch-drilling, followed by the action of the sidewise energy to rip the rock apart; therefore the purpose of block-holing has been achieved in a single operation. The side action or ripping action of these secondary jets is shown in Figure 9 on steel plate, as compared with the action of the same amount of explosive in an unshaped charge, shown in Figure 5. No stand-off was used—the shaped charge being placed directly on the object.

Contrary to the action of block-holing, which has the tendency to throw rock fragments in different directions, it will be noted that the ripping effects of these shaped charge blasts are directed downward, which substantially eliminates the

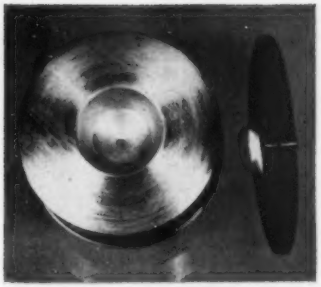


Figure 7

throwing of rock fragments, but leaves them concentrated in a relatively small area in the original position of the boulder.

The need, therefore, of drilling boulders as the first step and then loading the holes with explosives as the second step, is eliminated, and there is a resultant economy in man-hours and in the elimination of expensive, ever-deteriorating equipment.

In block-holing boulders, it is a recognized fact that a comparatively small amount of powder is necessary to reduce them, as compared with

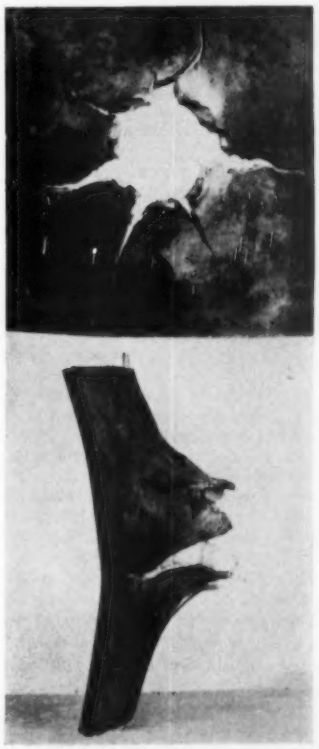


Figure 9

that needed in plastering or mud-capping. This due to the fact that in block-holing the explosive energy that really does the work is released within or *inside* the boulder, even though the hole might be only a few inches deep. However, in block-holing the actual cost of the explosive used is surprisingly small, as compared with the cost of labor first to drill and then load the holes.

Plastering or mud-capping boulders, on the other hand, where many times the amount of explosive is required per ton of rock as compared the block-holing, has certain advantages, but also many disadvantages. The reason why a greater amount of explosive is necessary is because the work-blow is struck on top of, or *outside* the boulder, even though the charge is covered with mud. Even so confined with mud, there is no first entry into the boulder—a blanket blow is struck with considerable wastage of explosive energy to the sides and above the charge. Adequate quantities of mud must first be prepared of the proper consistency to mold and stay molded on the explosive charge until it is fired. In many quarries and mines mud or even wet sand is not always readily available, and its preparation can constitute a considerable item of bother and expense.

The multiple-jet shaped blasting charge, which is simply placed on the outside of the boulder, has the advantages of both the block-holing and mud-capping techniques. It eliminates the necessity of drilling holes in boulders and accomplishes the results of mud-capping without mud or artificial covering of any kind. It produces disruptive action far in excess of the effect to be expected by the amount of explosive used.

Patents are pending on the multiple jet principle for shaped blasting charges. Uses include not only secondary blasting as described above, but also clearing congested or clogged finger raises in underground mining, dismemberment of steel bridges, blasting of abutments, quick reduction of metal for scrap and many similar purposes. It has further been found that the invention can be employed in lineal charges for the cutting of metal plate, as in shipyards and commercial metal salvaging operations, where cutting torches are normally employed with great consumption of time and materials. It is prophesied that the extensiveness of the field of use is almost unlimited, as time to date has permitted only the smallest exploration of this field.

Washington News Letter

(*From page* 87)

called fact finding. It has been generally stated but many of the arguments made and the conclusions reached are quite inconsistent with each other.

To recognize these inconsistencies it is necessary first to point out that distributing funds as a wage increase is generally regarded as inflationary, while putting funds into reserve for later payments withdraws them from the income stream and is generally regarded as deflationary.

The union argued that it wanted a wage increase because that would stimulate the economy, that is, it would give the economy an inflationary boost. At the same time, it is argued that it wanted pensions which would be deflationary. The companies' positions varied widely but were generally less inconsistent, since they were opposed to both measures. The Board, of course, recommended no wage increase because it wanted to maintain economic stability. At the same time, it recommended pensions which are likely to be unstabilizing because of their deflationary effects. Such is the economics practiced in Washington.

New Shaped Blasting Charge

(*From page* 98)

ing the throwing of what might have become dangerous missiles.

The convenience, economy and utility of these shaped blasting chages was emphasized by the demonstrator with the statement that one man, provided that the boulders were reasonably concentrated, could quickly and safely place, hook up and fire simultaneously as many as 25 charges in one hour.

Plans are under way to manufacture these new charges for the trade, in sizes of from ½ lb. up, and at a price to the user consistent with the results, convenience and economy he will receive.

(Editor's note: A history of the development of this multiple-jet shaped blasting charge, together with a technical discussion of why it works is found on page 99).

Talc, Pyrophyllite, Soapstone Make New Production Records

Mine production of talc, pyrophyllite, and ground soapstone made a new high record in 1948, according to reports by producers to the U. S. Bureau of Mines. All-time records were also made in both total quantity and value of these commodities sold or used. Total imports were slightly higher in quantity in 1948 than in 1947, and considerably higher in value. Exports of "talc, steatite, soapstone, and pyrophyllite, crude and unground" decreased slightly in quantity and increased slightly in value; but the exports of "powders—talcum (in packages), face, and compact" were sharply cut in value, dropping from $4,681,964 in 1947 to $2,661,132 in 1948.

Eleven states reported sales of talc, pyrophyllite, or ground soapstone in 1948. The greater part of the total sales was made in the Eastern states. In 1948, New York was still the leading producing state by a considerable margin, with North Carolina in second place, and California third. Sales of each of these leading states and Georgia reached new levels. Sales of pyrophyllite, most of which comes from North Carolina, increased in 1948.

Opening of a new quarry at Knappa, Ore., by the Astoria Crushed Rock Company began recently, according to an announcement made by Arthur Hildebrand, manager. The new operation will be permanent, and the original quarry on the Pipeline Road out of Astoria will also continue to be worked.

• The cameraman caught this "Caterpillar" D4 at the moment when a load was dumped into a truck at the Glen Popejoy Sand and Gravel Company's pit at Lakin, Kan. The D4-Trackson Traxcavator team loads gravel at the rate of 30 cubic yards per hour.

New Company Expands Perlite 1500 Miles From Source of Raw Material

another ON THE SPOT report

ONE of the first field installations of a perlite expanding process was completed about a year ago for the Perlite Manufacturing Co. of Carnegie, Pa. As its name would indicate, this company was

By WILLIAM M. AVERY

organized specifically to enter the booming perlite field. Not the least interesting of the several outstanding features of this particular undertaking is the willingness of the organizers to locate a processing plant so far from the source of raw material.

Graded perlite ore is shipped to Carnegie (located just outside of Pittsburgh) from the Rocky Mountains. At the start, sizing was done with a hammermill at the plant, but this practice was found to have several disadvantages. As now received, the raw ore weighs about 85 lbs. per cu. ft., with approximately 100 percent passing 14 mesh and about 33 percent passing 30 mesh.

At the plant the ore is dumped from a trestle onto a pan conveyor, and then elevated and discharged into a hopper inside the building. From the hopper the ore is fed at a rate of about 1000 lbs. per hour into an 8-ft.-long, gas-fired rotary preheater. This unit is fabricated from concentric 8-in. and 12-in. diameter steel pipes, and has perlite insulation between the pipe walls.

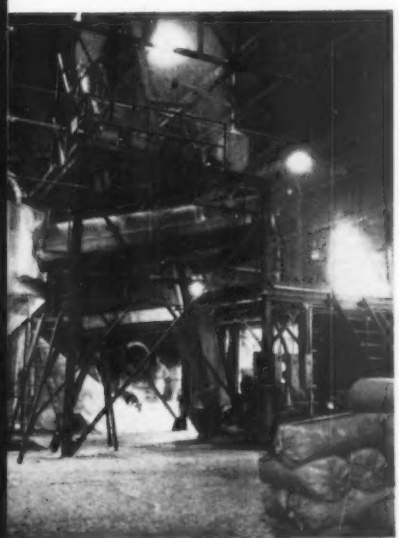
The ore is discharged from the preheater, at a recording temperature of about 1100 deg. F., into an inclined stationary calcining unit 15 ft. in length by 32 in. in outside diameter. As it enters the calcining unit, the free-falling ore is met by a blast of flame and air which propels the particles through the unit. Expansion or popping of the material takes place in this zone at a temperature of about 2000 deg. F.

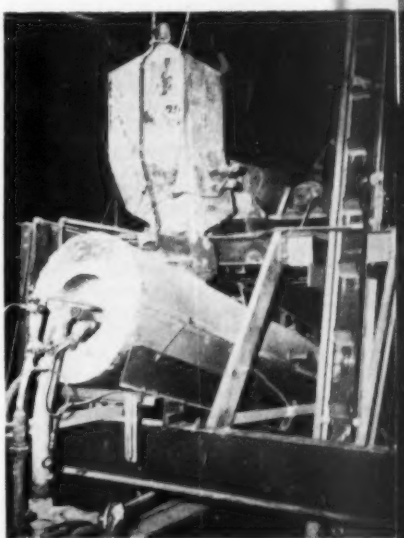
At the extreme temperature generated in the calcining unit, the preheated perlite ore begins to soften somewhat, and the contained water turns into steam with almost explosive force. It is this sudden generation of steam within the particles that causes them to expand to something like six times their original volume. The action has been compared rather aptly to the popping action of popcorn.

The essence of the process is in the speed with which the heating is done. When the ore is in granular form and not over 1/16 in. in diameter, only one to three seconds' exposure to the proper temperature is required. The suitable temperature range for puffing must be determined for each raw material, but it will usually vary from 1600 to 2200 deg. F.

The expanded perlite drops into the largest of three cyclone collectors. Here the coarse fraction (designated as No. 2) drops into a screw conveyor, while the fine particles are air-borne into the two smaller collectors. To take care of the demands for a finer aggregate which a number of the plastering contractors desire, a small screw conveyor has been attached from one of the smaller cyclones to the main screw conveyor. In this manner, the fines are conveyed to the coarse material in the main screw conveyor, and both the fines and coarse material are discharged together into 4-cu. ft. bags. This arrangement is so constructed that if the fines do not need to be added, a small gate is shut and the small cyclone discharges the fine material directly to 4-cu. ft. bags instead of being taken over by the small conveyor to be mixed with the coarser material. Although the plant has produced some material

• T. C. Ward Jr. (seated), president of the Perlite Manufacturing Company, and J. H. Hillman III, one of the directors of the firm.





• Left: This general interior view of the plant at Carnegie shows the elevator, the hopper (top), the rotary pre-heater, and the inclined calcining unit. The latter terminates in the cyclone collector just visible at the left.

• Right: A closeup of the firing end of the calcining unit. Gas at 8 lbs. pressure and air at 1½ to 2 lbs. are introduced separately.

• Left: The finished material is packed in 3-ply paper bags which hold 4 cu. ft.

• Right: No wires, sky hooks or other special props were required for thi. demonstration photo. Depending on the grade of material it contains, the outsize bag of perlite weighs from 20 to perhaps 30 lbs.; the 8- by 8- by 16-in. masonry unit weighs 26 lbs. We neglected to ask how much the young lady weighs.

sufficiently coarse to be used as concrete aggregate, most of the output has been in the fine and medium grades used by plasterers.

These two sizes are bagged in 4-cu. ft. 3-ply paper bags. The fine material weighs about 5 lbs. per cu. ft., as against 7 to 9 lbs. per cu. ft. for the grade used in plastering. Output of the plant at present is approximately 30 bags (or 120 cu. ft.) per hour.

The size of the finished product is influenced by several factors, including temperature, rate of feed, and air pressure, but these are of somewhat less importance than the size of the raw ore, since there is relatively little disintegration of the material in the calcining unit. The temperature at which the process is carried out also has a very direct influence on the bulk density and strength of the finished product. The expansion is greatest when the material is heated to the point of incipient fusion; but when actual melting occurs, there is an escape of gas, and the granules shrink.

About 90 percent of the particles produced in the expanding furnace will float indefinitely in water. This is due to the fact that as the perlite cools down from the red heat at which it is expanded, countless glassed-in, moisture-proof air cells are formed. The cooling process is also believed to create partial vacuums within the cell walls, with resulting improvement in the insulating properties of the material.

To date most of the output of the Perlite Manufacturing Co. has gone to the plastering trade in the Pittsburgh area. Perlite plasters are said to be highly resistant to fire. They resist cracking to a much greater extent than ordinary plasters, are easily nailable, and do not deteriorate in the presence of moisture. Because of their excellent soundproofing characteristics they are being used extensively in broadcasting studios, hospitals, schools, and bowling alleys. The material can also be readily channeled with ordinary hand tools for placing piping and cables.

Gypsum plaster made with perlite aggregate is said to weigh about one-third as much as plaster made with sand. In an average residence room this means a reduction in dead load of a ton or more. The lightweight material has about three times the insulating value of sand plaster. Plasterers claim that the reduced weight enables them to cover up to 50 percent more area in a day.

As a young company in a still relatively young industry, the Perlite Manufacturing Co. is keenly aware that its product has many applications outside the plastering field. Some of the more promising ones will be explored and developed if and when there is excess capacity available to supply new markets. In regard to the product's versatility, the ultra-conservative United States Bureau of Mines had this to say in an information circular* published three years ago:

"Perlite is merely a new product entering an established field now occupied by a number of mineral products. . . . (It) has the virtue of considerably more strength than most of (its) competitors, and can be made in a variety of densities. It is fireproof and mildewproof . . ., does not attract water . . . nor disintegrate in moist conditions, and can be made impermeable to water. . . . There will undoubtedly be certain uses where each of the competitors finds a special field, but perlite promises greater versatility than any of them."

T. C. Ward Jr. and F. G. Blandi are, respectively, president and treasurer of the Perlite Manufacturing Co. J. H. Hillman III is one of the directors of the company.

*Ralston, Oliver C.: *Perlite, Source of Synthetic Pumice*, U. S. Bureau of Mines I. C. 7364.

920,566 Tons of Bentonite Produced in U.S. During 1948

The production of bentonite in 1948 rose to 920,566 short tons, valued at $7,119,607, according to reports of producers to the U. S. Bureau of Mines. This was an increase of 21 percent in tonnage over 1947. This industry has grown rapidly. As recently as 1938, output totaled less than 200,000 tons per year, whereas in 1948 it approached 1,000,000. Nine states reported production as compared with 8 states in 1947.

Bentonite, as in previous years, found its largest outlet in the foundry and petroleum industries—foundry sand bond 228,799 tons; filtering and decolorizing oils, 291,349 tons; and rotary drilling mud, 329,752 tons—or 92 percent of the total tonnage. The remainder was consumed in a wide variety of uses.

The Wyoming-South Dakota area furnished 59 percent of the total tonnage in 1948; 42 percent was produced in Wyoming, and 17 percent in South Dakota. Texas supplied 3 percent, California 2 percent, and the remainder came from Mississippi, Arizona, Montana, Utah, and Colorado. The average value ($7.73) was somewhat lower than for 1947 ($7.79).

Basic Refractories Plant Under Construction at Gabbs

Construction is proceeding on the new magnesite-calcining plant of Basic Refractories near Gabbs, Nev. Burning will be done in a 300-ft. rotary kiln. The crushed ore, mixed with pulverized coal, will be fed into the kiln to produce the finished product, which will be shipped to the Denver, Chicago and Pittsburgh steel-producing areas. Its principal use is in the manufacture of high-temperature refractories.

Basic is already shipping more than 1,000 tons of brucite from Luning, Nev., to its Maple Grove, O., plant for distribution in the East and Middle West. Nearly a half-million tons of the crude ore will have been shipped by the end of this year, company officials report.

How To Depreciate Equipment

By BETTY LEE GOUGH

• The producer's problem of carrying depreciation is one which may be easily simplified.

THE problem of "depreciation"—what should be depreciated over a period of years on the books, and what should be charged off—as well as how to carry depreciation records, is a continuing problem to sand and gravel producers. Yet, this accounting procedure can be as simple as lighting a cigarette, even to the producer with no specialized bookkeeping knowledge.

Bookkeeping worries some sand and gravel producers. Yet, others trip lightly—and accurately—through the job of choosing which expenses should be charged off and which expenses should be depreciated; and the equally mysterious chore of maintaining the accounts on long-term investment equipment.

"What makes the difference?" "Two things," answers a Western sand and gravel producer, who has reduced all of his bookkeeping jobs to basic simplicity. The two things, he points out, "are easy-to-keep forms, and an authentic yardstick for measuring whether a piece of equipment can be charged off or must be carried on the books for tax purposes."

His yardstick is as simple as the forms he advocates. "It is this," he says, "I ask myself one question when I am in doubt. I inquire whether it is a piece of equipment rather than a purchase for re-sale, and whether it has a life of more than one year. If the answer is yes, then it should be depreciated.

"Take as an example, one expense that could conceivably puzzle any producer who is not acquainted with accounting procedures. Let us say that the item in question is a desk chair. Is this a piece of permanent equipment? Yes, it definitely is. Has it a life of more than a year? Again, the answer is yes. All right. So it should be depreciated rather than charged off as a regular day-to-day expense.

"That's all there is to it. One simple question gives you a way to decide whether something should go onto the regular expense sheets, or whether it should be depreciated for income tax purposes. Incidentally, Uncle Sam insists that long-term investment equipment must be depreciated rather than charged off immediately. But that is not the only reason why it is a good idea to do so. Depreciating equipment is also sound business procedure. If you buy a lot of equipment in one year, the books will show that you had a very slim year, or even that you lost money, despite the fact that you may have done a whopping volume at a very good profit. What is used over several years should also be charged over several years as good operating practice."

Supplies and other incidental purchases that have a short life only can be taken off as direct expenses, but equipment, machinery, fixtures, and such—things that last a long time—cannot be claimed in whole during the year they are purchased. You must depreciate them. The depreciation time should be roughly the normal life of the item.

Thus, for example, say that a fixture that cost $100 is expected to last ten years. At the end of that time, it would have a resale value of perhaps $10. So you would depreciate the desk nine dollars each year for the decade.

If you use a car for both business and pleasure, figure the part of its life that is devoted to business uses. Then take that percentage of its value. Depreciate the figure you have in the same way that the desk above was figured.

The Collector of Internal Revenue won't raise cain about how you carry depreciation on the books, provided you use any recognized accounting method, figure on a reasonable life, and use the same depreciation procedure consistently.

Illustrated (below) is a simple form used by many sand and gravel producers to keep their depreciation records.

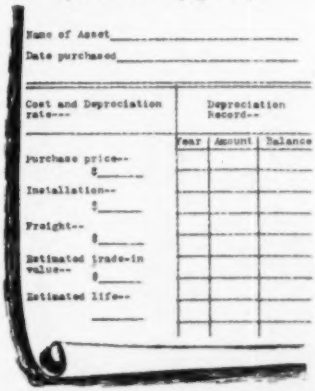
On the top line goes the name or description of the piece of equipment.

Below that goes the date it was purchased. This is necessary for establishing how long the record should be kept, since a definite "life" is always assigned to a fixture being depreciated.

In the column at the left is pertinent information on the piece of equipment. Its value is marked. fed in and the mold closed. Its ends This includes several factors in addition to the price. These are also indicated. They are the freight bill, the cost of installation, and the interest paid on the loan if any.

(The interest, the installation charge, and the freight can be entered as part of the depreciation record, or they can be charged on the daily expense records as they

(*Continued on page* 111)


Name of Asset_____

Date purchased_____

Cost and Depreciation rate--	Depreciation Record--		
	Year	Amount	Balance
Purchase price-- $_____			
Installation-- $_____			
Freight-- $_____			
Estimated trade-in value-- $_____			
Estimated life-- _____			

• Simple form for keeping depreciation record.

Missouri Contractor's First Commercial Stone Plant

another ON THE SPOT report

THE PICTURES on this and the adjoining page show various stages in the operation of the Joseph J. Griesemer quarry and plant, located two miles east of Springfield, Mo. Mr. Griesemer, who is currently

By WILLIAM M. AVERY

president of the Missouri Limestone Producers Association, has been active in the construction field for more than 20 years, and has produced aggregates for his own use during most of that time. However, the plant at Springfield, which has been in production about 2½ years, is his first venture in the commercial field.

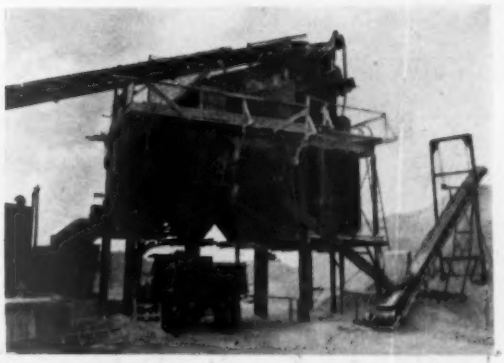
Core drillings on the 40-acre deposit show an excellent grade of Burlington limestone down to a depth of about 90 ft., and the total amount of marketable stone is estimated to be not less than 8,000,000 tons. The overburden averages about 5 ft., and is never in excess of 10 or 12 ft.

An 18-ft. face is worked with an Ingersoll-Rand wagon drill, shooting from two to four rows of holes every other day. Two benches have already been opened on an 800-ft. face, and others will be developed as necessary. Initially the operation was seriously hampered by the excessive amount of secondary blasting that was required, but this difficulty has been all but eliminated by the use of Western Cartridge fast-delay caps, the actual reduction amounting to about 80 percent. The stone is recovered with a ¾-cu. yd. Lorain 41 diesel shovel and hauled to the plant (a distance of about 700 ft.) with three end-dump trucks. Air for primary drilling, and for the small amounts of secondary drilling still required, is supplied by a LeRoi portable compressor.

(*Continued on page* 111)

• Scene at the Joseph J. Griesemer quarry at Springfield, Mo., with the ¾-cu. yd. diesel shovel loading a truck in the foreground.

• A general view of the Griesemer plant, which is about 700 feet from the quarry.



• Top, left: Drilling a snake hole with the wagon drill at the quarry, in preparation for blasting.

• Top, right: Air for primary and secondary drilling is supplied by this portable compressor.

• Center, left: The first stage of processing is this 24- by 36-in. jaw crusher, fed by a 5- by 14-ft. apron feeder.

• Center, right: Joseph J. Griesemer, head of the firm which bears his name, is also president of the Missouri Limestone Producers Assn.

• Bottom, left: One of the two hammermills used in the production of agricultural limestone. Note the separate diesel drive.

• Bottom, right: Truck loading under the 120-ton, 4-compartment bin. There is also a siding for loading cars.

Jet Piercing at Kingston—

New Linde Rig Performs Well in Extensive Tests at Trap Rock Quarry in New Jersey

another ON THE SPOT report

IMPORTANT economies in the drilling of very hard rock formations are envisioned as the result of extensive experimental work during the past six months with a new jet-piercing rig developed and built by The Linde Air Products

By WILLIAM M. AVERY

Company. The new unit, which is known as the JPM-2, was operated on an experimental basis from April through September of this year at the Kingston, New Jersey, quarry of the Kingston Trap Rock Company. Its performance in the tough diabase of this quarry, where 3-in. minimum diameter breast and toe holes have been pierced at rates as high as 15 ft. per hour, goes far toward establishing jet-piercing as a permanent and highly versatile adjunct of certain quarry drilling operations.

Since many of our readers may not be familiar with the basic principles of jet-piercing,* a brief description of the process may be helpful. Jet-piercing is accomplished by directing against the surfaces of the rock a jet of flame produced by burning a petroleum-base fuel and oxygen in a special blowpipe. Disintegrating of solid rock in the path of the flame starts almost immediately, and the pressure of the burning gases forces the spaller particles past a water spray located just back of the burner in the blowpipe. The spray quenches and embrittles the materials so that it can be readily broken up into fine particles by the hardened-steel blades on the revolving reamer-like hole sizer. As the water turns to steam, this pressure, in combination with the gas pressure, force the chips out of the hole.

Considerable fusion occurs in piercing cracked and broken strata. It is sometimes difficult to break up and eject the resulting slag, particularly when the fused material is heavy and viscous. Best results are obtained when the primary action consists of spalling.

In the JPM-2 machine, which was designed primarily for experimental and demonstration purposes, the blowpipe can be advanced or retracted at controlled speeds by means

*For an earlier report on jet piercing see Trauffer, W. E.: *Oxy-Acetylene Drilling Expedites Production of Flint Grinding Pebbles.* PIT AND QUARRY, April 1944, pages 68-70.

• The JPM-2 drilling a toe hole at the base of the Kingston Trap Rock Company's quarry. The character of the trap rock formation—very much broken up—is shown here.

• The JPM-2 in operation at the top of the quarry, drilling a vertical blast hole.

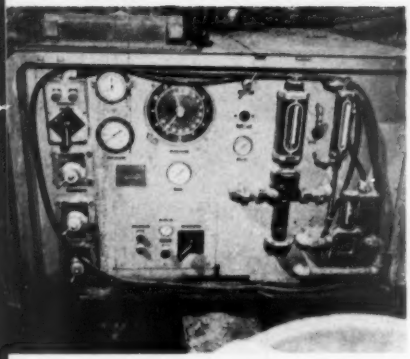
• Right: Making flame adjustments preparatory to piercing the boulder with the JPM-2.

• Center, left: Lighting the high-flow burner. Note the cooling water spray, which comes from multiple orifices just behind the head.

• Center, right: Starting (spudding) the hole in a large block of stone which had been hauled to the machine from another part of the quarry for the experiment.

• Bottom, left: Normal piercing conditions. The steam, together with the gas pressure, carries the spallings out of the hole.

• Bottom, right: The hole is completed. Note the flame issuing from the left side of the rock.



• Left: The control panel of the JPM-2 machine. Oxygen, kerosene and water instruments are at the right; the blowpipe controls at the left.

• Right: Jet-pierced toe holes, 18 feet deep, in cracked formation.

of an endless roller chain and sprockets at either end of the 8-in. diameter tube which houses the mechanism. During drilling operations the blowpipe is rotated by means of a drive bushing at the leading end of the housing and a keyway which runs the full length of the pipe. Variations in the angle of drilling are accomplished by means of the swivel which supports the entire mechanism at a point about 5 ft. from the burning end. The swivel is mounted at one end of the rubber-tired wagon on which are also mounted the various units of the hydraulic system which controls the operation of the machine, the fuel supply tank, and the centralized control panel.

Although this particular machine is limited to a drilling depth of 20 ft., a larger model, the JPM-1 (now in service on the Iron Range), drills vertical holes up to a depth of 31 ft., and experimental work by Linde engineers indicates that piercing operations may be carried on to depths of 50 ft. or more. Because the JPM-2 machine can drill at any angle from the vertical to approximately 10 degrees above the horizontal, it is particularly applicable to toe- and breast-hole drilling. Most of the experimental work at the Kingston quarry has been with this type of drilling.

The fuel is atomized, mixed with oxygen, and burned under pressure in a detachable piercing head, and the hot gases are ejected through one or more jets. The number, arrangement and pitch of the jets all appear to have an important effect upon performance, and several different nozzle designs have been developed as a result of the experimental work at Kingston. For chambering work, which is one of the very important applications of jet-piercing, the burning gases are ejected from a special head in which the jets are at right angles to the axis of the blowpipe.

Minimum size of hole in piercing operations is determined by the diameter of the reamer-like hole sizer which is slipped over the burning nozzle. The steel blades on this head housing not only gauge the hole, but break up fused material and agglomeration of spallings.

Water for cooling the nozzle comes from multiple orifices located just back of the head. To protect the piercing head from overheating, there is an interlock arrangement which cuts off the oxygen when flow of water drops below the desired level. To avoid pressure fluctuations in the Kingston operations water was pumped from a small portable tank set up adjacent to the drilling rig.

Although any hydrocarbon fuel can be used successfully for jet-piercing, kerosene is most frequently used because of its consistent quality, and because it remains fluid except in severest cold weather. The fuel is pumped from the supply tank to the blowpipe. Oxygen for the work at Kingston was supplied from high-pressure cylinders mounted on a trailer.

The pressure and flow of oxygen, kerosene, and water are indicated by three gauges and three rotameters mounted on the control panel. When the rig has been spotted and the angle of drilling has been fixed, the sequence of operations is as follows: The water is turned on and the flow adjusted to about 420 g.p.h.; fuel and oxygen valves are opened and the mixture is ignited with a flare; the flame is adjusted by manual variation of the flow of kerosene and oxygen; the blowpipe is started rotating at about 20 r.p.m. and the head is advanced to the face of the rock. From then until the piercing operation is completed the operator divides his attention between a dial which shows the depth of the burner in the hole, and a gauge which indicates the hydraulic fluid pressure at the rotary drive motor. When an obstruction in the hole causes the pressure to rise, the blowpipe is backed away from the obstruction

Material Pierced	Total Footage	Speed ft. / hr.	Average Consumptions		
			Oxygen c.f.h.	Fuel lb. / hr.	Water g.p.h.
Magnetite	174	8.5	2,600	100	300
Hematite	97	14.0	2,570	109	300
Dolomitic Limestone	103	31.5	2,500	72	300
Coarse Granite	5	20.8	2,800	65	300
Quartzite	158	28.4	2,260	80	300

Data in the table above show jet-piercing performance in various formations. None of these data, however, refer to the recent work at the Kingston Trap Rock Quarry.

• The experimental crew, left to right: R. O. Wyland; D. H. Fleming, development engineer; C. S. Arnold and C. A. Napiorski.

until it has been spalled clear. The blowpipe drive mechanism is shielded from flying rock particles by a target plate located just back of the piercing head. The location of the control panel keeps the operator away from the discharge of steam and cuttings.

In the demonstrations of the JPM-2 which we witnessed at Kingston several weeks ago, several types of burners were being tried experimentally on a large block of stone which had been hauled to the machine from another part of the quarry. This practice was followed in order to eliminate the variables which are always present in some degree in face drilling, especially in loose and broken formations, and it also has the advantage of permitting more thorough inspection of the results. In the first test we witnessed, a 4-in. minimum diameter hole 5 ft. 6 in. long was pierced at a rate of 22.8 ft. per hour, using a single-orifice high-flow burner. A subsequent test in the same rock using a dual-orifice burner yielded at a rate of 24.8 ft. per hour with lower oxygen consumption. In both cases the resulting holes were astonishingly clean cut and uniform.

Because of the experimental nature of the jet-piercing work at Kingston, the rates of fuel and oxygen consumption are probably not too significant. Up to 12 gallons per hour of kerosene was consumed and oxygen consumption varied from 2200 to 3000 cu. ft. per hour. A cylinder trailer provides enough oxygen for about 15 hours of drilling. Effort was understandably concentrated on the development of techniques and fittings to do the best possible job of drilling, and the question of costs was considered to be of secondary importance. But the cost-saving potentialities of this still relatively new quarry tool will be apparent at once to any operator who has had to struggle with excessively hard formations.

The results at Kingston and at other locations where jet-piercing has been tried indicate that the method may have a definite place in the drilling of very hard rock formations. In softer formations it will probably not be competitive with conventional methods of blast-hole drilling. In chambering operations the method has obvious and impressive advantages.

The JPM-2 machine is perhaps chiefly interesting as an important forward step in the adaption of jet-piercing to certain quarry drilling problems. It is most noteworthy as an easily portable rig which is capable of making blast holes at any desired angle. For vertical drilling, greater drilling depth will almost certainly be required, and there seems to be little doubt that it will be achieved in time.

Jet-piercing also has potential interest as a tool for secondary blast-hole drilling. While machines of the JPM-2 class might be too costly for secondary drilling work, the same principle adapted to a smaller blowpipe rig, perhaps hand-held, would seem to have interesting possibilities.

Griesemer Plant

(*From page* 106)

The plant consists of a 5- by 14-ft. apron feeder ahead of a 24- by 36-in. Universal jaw crusher (both driven by a Caterpillar 8800 diesel engine), a double-deck Simplicity screen, two No. 4 Universal hammermills driven by D-17000 Caterpillar engines, and a 4-compartment bin which holds 120 tons of finished material.

Two 18-in. by 60-ft. belt conveyors load agricultural limestone directly from the bins into railway cars on an 18-car siding. For loading out of stockpiles there is a Barber-Greene loader and a D-4 Caterpillar tractor.

In addition to agricultural limestone, which accounts for about 25 percent of total production, the company supplies aggegates for asphaltic concrete construction, filter tones for filter beds, and some material for use in concrete block plants. Its agricultural limestone has a calcium carbonate equivalent of 99 percent, and 100 percent of the material is minus ⅛-in.

Depending on the size of stone in production, the capacity of the plant ranges from 100 to 150 t.p.h. About half the output is shipped by rail. Fifteen men are employed in the operation.

Depreciating Equipment

(*From page* 105)

are paid. Either way is a good accounting procedure, and Uncle Sam's nephew, the Collector of Internal Revenue, won't care which system you use—as long as you are consistent and do not vary from fixture to fixture.)

In this space, you also enter the estimated life of the fixture. This is nothing more than the number of years you expect it to last. When it is worn out, or when you replace it for a newer model, the chances are that you will be allowed a trade-in on it. Enter the trade-in you expect to get—a rough guess—in the left hand column.

The difference between the cost (including freight and interest if you choose to carry these on the depreciation record) and the estimated trade-in value gives you the sum that is to be depreciated. You have already estimated the number of years' service that you expect to get from the piece of equipment. Divide the sum to be depreciated by the number of years that the fixture will be used. This gives you the yearly amount to be entered as depreciation in the right-hand column.

If you have a fixture repaired, does this cost go into the depreciation record? The best accounting practice is to enter upkeep costs as a regular expense on your daily books, under the heading of, "Repairs."

At the end of the year, when you prepare a final profit and loss statement, the depreciation entries are transferred to that record. But you continue to keep the record slips. They are used from year to year. The *total* depreciation on every piece of equipment that you own is entered under the heading of, "Depreciation" on the profit and loss statement.

For the income tax form, the record of depreciation is entered item by item. In the event that the tax form does not allow enough room for your complete depreciation list, simply mark, "See attached schedule," across the tax form box, and clip a complete breakdown to your tax return.

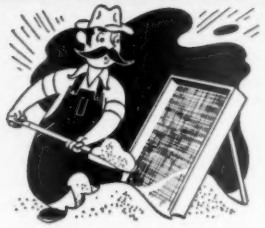
April-June Gypsum Output Lower than 1948 Figure

Domestic mine production of crude gypsum totaled 1,589,383 short tons for the second quarter of 1949, according to reports made to the U. S. Bureau of Mines. Imports of 511,039 short tons brought the total apparent supply to 2,100,422 short tons—a decrease of 16 percent from the second quarter of 1948. Calcined gypsum production, which normally would increase in the second quarter, was slightly less than the first quarter of 1948 and 17 percent less than the second quarter of 1948.

Sales of most of the important gypsum products were well below seasonal expectations. Total board sales were 25 percent below the second quarter of 1948; base-coat plasters were 18 percent less; and cement retarded was off 8 percent.

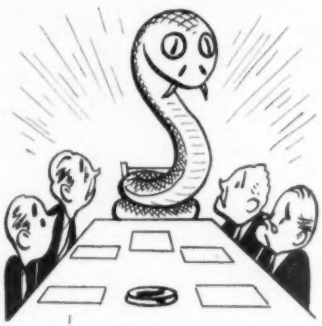
At mid-year indications were that the normal seasonal increase in most types of construction during the third quarter and an expected increase in home building would improve the sales situation for gypsum products.

Screenings



by William M. Avery

IF THE steel mill and coal mine operators think they're having troubles with the collective bargaining system, maybe they can find a measure of comfort in a story just relayed to us from Japan. It seems that members of the local union in the Nihon Cement Co. were engaged in bargaining with the management. Things weren't going too well for the union laddies, so they



produced a large snake, plopped it down on the conference table, and stalked from the room, locking the door as they went out.

We realize that this is a helluva place to end a story, but so far as we know the management representatives are still in there conferring with the snake. Come to think of it, there really isn't a whole lot of difference between the Japanese procedure and ours. Over here the managment representatives sooner or later find themselves locked up with Phil Murray or John L. Lewis. If they were given their choice, we aren't at all sure they wouldn't prefer the snake.

Samaritans

IF ANY of our readers has a couple of spare orchids kicking around, and would like to see them used for a worthy purpose, we know just the place for them. One ought to go to Robert Crown, vice-president of the Material Service Corp., who recently donated a truck-load of badly needed sand to replenish the play boxes at a free play ground; the other to Sam Berg, president of Worth Sand & Gravel Co., who donated a bulldozer for half a day to help transform a rubble-filled lot into a ball field for underprivileged Chicago youngsters.

Crime Wave

PIT AND QUARRY'S annual award for obstacle surmounting goes to the enterprising gents who recently swiped a 12-ton, $14,000 concrete mixer from the Riverside Sand & Gravel Co., Newton Lower Falls, Mass. That, by the way, is at least the tenth item we've received in recent months regarding the theft of concrete mixers, and we're getting mighty curious to know what goes on in the underworld. The only plausible theory we've evolved to date is that the strong-arm boys are becoming tidier, and instead of cluttering up the streets and highways with the bodies of their competitors, are giving them decent burials in concrete.

Maybe the best way to hang onto a concrete mixer, if you happen to own one, is to make it known that you're not averse to moonlight operations on a "no-questions-asked" basis.

Bouncing Pedestrians

WE understand that street pavements of asphalt, containing a small amount of powdered rubber, are being tested in several of the states this year. Presumably the rules

will be altered to permit motorists to hit pedestrians either on the fly or after one bounce.

Pling! Clunk!

IT SOUNDS like a gag, but we have it on good authority that a Clinton, Mass., burial vault manufacturer has perfected a guitar made out of concrete. Now if it had been a harp, we could see some plausible connection with the vault business. The human species being incurably optimistic, you could probably sell a slew of concrete vaults by offering to throw in a reinforced-concrete harp with every sale.

Anyhow, the United Press sent somebody out to interview the inventor, and the story came back

that the guitar actually plays. It was noted that the instrument is about 10 pounds heavier than its wooden counterpart. The inventor's comment to the press: "If anyone else can make one, I'll be surprised." Ours, to no one in particular: "If anyone *tries*, we'll be even more surprised."

Garnish with Parsley

SOMEBODY is probably pulling our leg, but anyway, since we ran that item about mixing Cheshire cheese and lime to make cement, we've received a wood paint recipe that calls for mixing finely ground cement and milk. If this keeps up we're going to change the by-line on this page to Aunt Jemima.

W-W Pumice Company's Modern Plant Has Capacity of 500 Tons Daily

another ON THE SPOT report

ONE of the newest entrants into a growing list of producers of pumice lightweight aggregates is the W-W Pumice Co. of Los Angeles. The company's plant and deposit are located in the lower foothills of the Coso Mountains just off

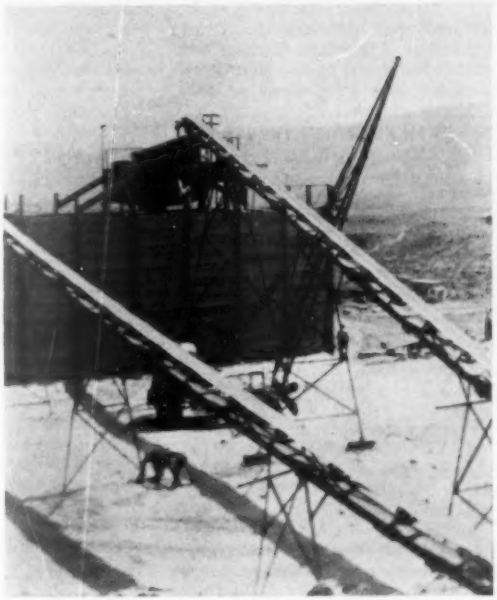
By HARRY F. UTLEY

U. S. Highway No. 6, about 12 mi. north of Little Lake, Calif., and 180 miles northeast of Los Angeles.

Reserves of the exceptionally high-grade rhyolite pumice of Pleistocene Age controlled by the company are calculated at at least 800,000 tons. For the most part, the deposit fortunately contains the coarser material desired for concrete aggregates, dry, loose weight averaging only 29.8 lbs. per cu. ft., as reported by the California Testing Laboratories, Inc. Chemically, the same laboratories report an analysis of the pumice as follows:

SiO_2	63.64 percent
Al_2O_3	16.30 percent
Sulphur, as SO_3	nil
Soluble alkalies	0.24 percent

There is no evidence of bentonite in the deposit at all, the report further reveals.

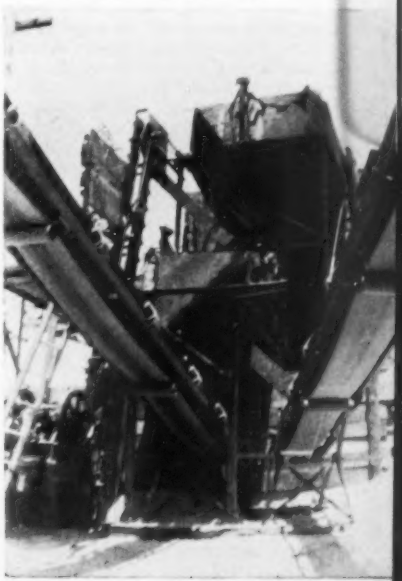


• This view at the W-W Pumice Company's plant near Little Lake, Calif., shows the two conveyors carrying coarse (left) and fine pumice (right) to the storage bins. The fine material is separated into three sizes by the screen shown above the bins.

The W-W plant is simply designed and highly efficient. It has a rated capacity of 500 tons daily. The low operating cost is reflected in the price of the finished material, block-plant aggregates for example currently selling at $3.25 f.o.b. plant. Design and erection was undertaken by Stephens-Adamson Mfg. Co., Los Angeles, who also furnished most of the equipment.

The material is loosened by an Allis-Chalmers H14 diesel-powered tractor equipped with a ripper and 'dozed to a grizzly hopper feeding a field conveyor which leads to the bin at the plant. From the bin, a feeder puts the rock onto a 4- by 8-ft. double-deck screen. A Cedar Rapids 9- by 16-in. jaw crusher, in closed circuit with the top deck, crushes down the plus- 1¼-in. material. The 1¼- to ⅜-in. retained on the lower deck is carried by belt conveyor to storage in the truck-loading bunkers. Lower deck minus-⅜-in. throughs go by another conveyor to the top of the bunkers, where it is separated into three sizes, usually "pea gravel" (⅜ to ⅛ in.)

(*Continued on page* 116)



• Left: The primary scalping and sizing screen, with the jaw crusher below, and the return elevator to the screen.

• Right: The feed bin above the first screen and the crusher, as seen from below the two conveyors leading to the storage bunkers.

Report on Current Labor Developments

another P&Q exclusive

TODAY'S big labor problems revolve around pensions—how much should be paid and who should pay for them. At this writing, the basic steel industry is shut down tight over a pension dispute; the coal industry was at first shut down partially, then fully, then partially,

By S. HERBERT UNTERBERGER
Director of Research
Labor Relations Information Bureau
Washington, D. C.

and will probably be shut down fully again before its pension dispute is finally settled, and the Ford Motor Company avoided a shutdown only by an eleventh-hour agreement on a pension plan.

Nor is this all. It takes no clairvoyance to know that when the basic steel strike is settled (and they always get settled after a while), whatever pension gains the union has made will be demanded of all the fabricators of steel products which the same union has organized. The union which won a pension plan from Ford has already announced that the Chrysler Corporation is next on the list and that they expect to make similar gains from General Motors as soon as their present contract expires. And even before that is accomplished, it is likely that the smaller automobile companies will be required to fall in line. The same union also has under contract many auto parts suppliers, metal and electrical products fabricators and even aircraft factories. All these concerns can expect demands upon them for pension plans.

Nor is that all. Other large unions and small unions are already pressing or have announced that they will press for pension plans. Such demands have been served on the General Electric Company and Westinghouse and on thousands of other employers large and small. While the CIO unions have been most vocal and most aggressive in pressing their pension demands, employers whose employees are organized by AFL unions cannot safely assume that they will be spared the pension pressure. Some AFL unions have been at least as demanding, while others are sure to feel the competition. Employers whose workers are not organized by any union are similarly vulnerable. If workers in surrounding unionized establishments are covered by pensions, it will not be long before employers of non-union workers will be required to provide similar benefits.

It is important to note the amazing speed with which this demand for pensions has spread. Employers who yesterday felt that pension plans for their employees were remote, indeed, are today having demands served upon them, and will be bargaining about them tomorrow. No employer is immune. Because of the transcending importance of this subject, this report will be devoted entirely to the problem of pensions and several reports to follow will bear heavily on the same problem.

Source of the Pension Pressure

For the pension demands to have burst upon us with such pressure, they must have been building up for a long time. That is exactly what happened.

It used to be in the United States that working in a factory or a mine was regarded as a temporary affliction. A worker with energy and imagination would expect to strike out for himself. Many budding young enterprisers were doomed to disappointment. Nevertheless, most workers did not expect to continue to work for the same employer until retirement. With this kind of psychology, the demand for pensions rarely arose.

Increased industrialization, larger-sized business units and the decline in importance of independent farming all contributed to a changed attitude. Most workers now recognize that they are likely to remain paid employees all their lives. And, if they are working for a desirable employer, they would prefer to stay with him and advance as far as possible along the line of promotion. Hence they are far more interested than formerly in what is waiting for them at the end of the line—an adequate pension or a difficult old age.

Employers themselves are partially responsible for this change in attitude. In the 1920's for the first time, employers were made aware of the high cost of labor turnover. They began to do something about it. In a large measure they were successful in reducing labor turnover, and they reaped the advantages of a more stable and more efficient working force and the savings in training cost and reduced spoilage. At the same time they also found themselves with a labor force which on the average was getting older every year and which in return for years of faithful service, was looking to the employer for protection against the hazards of old age and disability.

Unions, too, were responsible for this change. Their programs also tended to encourage greater employment stability. Seniority provisions in union contracts require that promotions, more desirable hours and better working conditions be offered first to employees with the longest service. Also, years of service frequently determine the length of vacations and other employment benefits.

It is no wonder, then, that men who had become reconciled to being wage earners all their lives should turn their attention to security for old age. The demands first became acute during the great depression of the 1930's when many older men were thrown out of work with little likelihood of ever returning to their former employment.

At that time, they had the alternative of putting pressure for pensions on the employers or on the government. Realistically there was practically no chance of getting such pensions from employers. Unions, which might have been able to apply the pressure, were much weaker than they now are. Many workers were out of work and hence did not have any employers. Finally, employers were also suffering from the depression and would not have had the necessary financial resources.

The government came forward with the Social Security program. Even when that program was first initiated, it was not regarded as the full answer. While the benefits were low, this was believed to be necessary in order to be sure that the program would not run out of funds.

In order to understand the problem, a brief review of these benefits may be helpful. A wage earner who is entitled to a pension under the Social Security program on retiring at age 65 or later, may receive as low as $10.00 a month and no more than approximately $60.00 a month. If he has a wife who is also over 65 the combined pension of both may vary from $15 to $85 a month. If he should also have a minor child, the total benefits until the child is 18 could vary from $25 to $85 a month. This rate of benefits have remained unchanged since the Act was passed in 1935. In the meantime the cost of living has risen by more than 60 percent.

After World War II, the choice

(*Continued on page* 118)

N.S.G.A. Directors Discuss Important Industry Problems at Asheville Meeting

another ON THE SPOT report

THE semi-annual meeting of the board of directors of the National Sand and Gravel Association was held September 26-28, 1949, at the Grove Park Inn, Asheville, N. C. From every standpoint it was a most successful meeting, as the attendance was excellent, the meetings devoted to important subjects, the accommodations and food excellent, and the entertainment well planned and varied. The same was true of the meeting of the board of the National Ready Mixed Concrete Association, which was held at the same time. Most of the directors brought their wives, for whom there was a wide choice of entertainment. The success of these meetings held annually at outstanding resorts has practically established a policy, and members of both boards confirmed almost unanimously their decision to hold the 1950 board meeting in September at the Sun Valley Lodge, Sun Valley, Idaho.

By WALTER E. TRAUFFER

Members of the executive committees of both associations met on Sunday night, September 25, to discuss the most important subjects expected to come before the boards, and the long hours they put in made it possible for the boards to act smoothly and intelligently with the minimum of irrelevant discussion. It also made possible cooperative action by both boards on matters affecting both industries.

The opening sand and gravel board meeting on Tuesday, September 27 was presided over by President Thomas E. Popplewell (Fort Worth Sand & Gravel Co., Fort Worth, Tex.), assisted by Vincent P. Ahearn, executive secretary of the association, and Stanton Walker, director of engineering. Mr. Popplewell in his opening address told briefly of the many important legislative developments pending in Washington and of the vital problems of the industry, both business and technical, to be discussed at this meeting and that of the joint session to follow. The subjects to be discussed included taxation, zoning, freight rates, safety, various technical problems and activities, progress in moving the association's laboratories to new quarters, plans for the coming national convention and exhibit in Chicago, etc.

In his report to the board Mr. Ahearn went over the financial statement, which showed the association to be in excellent financial condition. Since January, he said, there has been some increase in membership, but there is room for expansion. The present membership is estimated to represent from 65 to 70 percent of the commercial productive capacity of the industry, but Mr. Ahearn advised the addition of more small operators in order to make the association even more representative of the sand and gravel industry as a whole. He asked members to contact other producers in their area, pointing out the many advantages of membership and what the association has done for the industry as a whole. He also described some of the regional meetings held during the year to keep the staff in the closest possible contact with its members and their problems in various parts of the country. Non-member producers in each area are invited to attend these meetings so that they can get a first-hand view of what the association is doing. These meetings have been successful in every way and the board approved Mr. Ahearn's suggestion that they be continued in 1950.

Vincent P. Ahearn
N.S.G.A. Executive Secretary

The subject of percentage depletion received considerable attention, and a brief report was made on the activities of the association in getting sand and gravel included with the other nonmetallics listed in the action then before Congress. Mr. Ahearn gave a brief resume of the entire subject and progress to date, taking the attitude that it is something to which the sand and gravel industry is entitled as much as other industries now enjoying these benefits. He felt that this particular action had little chance of being approved, or if approved in committee had little chance of escaping the President's veto, but said that such a veto will not stop efforts to obtain percentage depletion. The better the showing made this time, he said, the better the chances for obtaining percentage depletion for the sand and gravel industries the next time the subject is brought before Congress.

William E. Hole (American Aggregates Corp., Greenville, O.), reported on the activities of the zoning committee, of which he is chairman, on zoning, stream pollution, etc. This committee has been enlarged because of the growing realization of the importance of these problems to the industry. The public attitude toward these problems, said Mr. Hole, is becoming emotional and the actual existence of some producers is threatened. The sand and gravel industry, he said, is deficient in its public relations; and he urged every producer to do his share in improving this condition. The entire subject was recommended for complete discussion at the annual convention in Chicago. Mr. Hole stated that the zoning committee at its meeting the previous afternoon, had recommended that the committee be divided into two sections, one on stream and the other on air pollution. The board voted to do this.

Wayne W. King, (W. S. Tyler Co., Cleveland, O.), chairman of the Manufacturers' Division, told of the work that has been done in getting more manufacturers to join the division and to exhibit at the coming convention. The machinery ex-

position, he said, is already the largest in the history of the association and is still growing. He urged that ample time be allowed during the convention to permit producers to see these exhibits and that everything possible be done to get them to visit it.

The report of Stanton Walker, engineering director, was devoted largely to telling of the progress made in transferring the association's laboratories to the new and commodious quarters on the campus of the University of Maryland. The removal of the equipment from the old quarters has nearly been completed; and when more of the new equipment ordered has been installed, the association can boast of one of the finest laboratories of any association. A complete description of this new laboratory will appear in an early issue of PIT AND QUARRY.

Mr. Walker also commented on the situation with respect to ballast and bituminous mixtures. Arrangements have been made with other aggregates associations to facilitate the writing of better specifications by pooling their information. Greater stability is required in both of these products. The subject of adhesion in particular, he said, will be given more attention in the laboratory.

In commenting on the War Department specifications for aggregates, Mr. Walker said that theory and practicability are now being better balanced and that in some recent contracts for dams thermal compatibility of aggregates has been held less important than formerly, permitting the use of natural sand with crushed stone, and in one case natural sand with sand and gravel.

The committee on operating problems, which is selecting subjects for discussion at the operating meeting at the annual convention, has ample subjects to choose from, said Mr. Walker. The problem will be to select the subjects of interest to the most producers.

C. A. Barinowski (Roquemore Gravel Co., Montgomery, Ala.) told of the excellent work done by the committee on freight rates in getting inter- and intra-state rates balanced in the Southeast. It was proved that by properly presenting inequalities in freight rates to the carriers and the Interstate Commerce Commission fair rates can be obtained. Now, Mr. Barinowski pointed out, all states in the Southeast are on the same basis, and the interstate rates are the same as the intrastate rates. The trend to truck haulage, said Mr. Barinowski, was the principal argument used.

Stanton Walker
Engineering Director, N.S.G.A.

Mr. Ahearn told of the negotiations with the Bureau of Mines with respect to the association's annual safety contest. Henceforth, he said, the contest will be industry-wide, and the Bureau will continue to conduct it, but the trophies presented by *Rock Products* will be awarded to the member companies with the best records in each of the two capacity groups. In effect, there will be a contest within a contest.

At the joint meeting of the two boards on Wednesday, September 28, places and dates for future conventions were announced. The 1951 annual conventions will be held in New Orleans, La., February 11 to 15; the 1952 conventions, which will include a machinery exposition in co-operation with the National Crushed Stone Assn., will be held at the Stevens Hotel, Chicago, either the week of February 25 or March 3, with the crushed stone convention taking the other week; the 1953 convention will be held the week of February 22 at the Fairmont Hotel, San Francisco.

W. W. Pumice Company

(*From page* 113)

and two sizes of sand, by another double-deck screen.

The bunkers are divided into four compartments and have a combined capacity of about 1200 cu. yd. Eight drop-chute gates load the finished material into trucks for delivery, the normal market area embracing southern and central California.

Power is produced at the plant by a Caterpillar D8800 diesel engine direct-connected to a generator. About 300 ft. of 18-in. and 24-in. belt conveyors are used, plus a belt-bucket elevator which returns the product of the crusher to the primary screen.

William Wainscott and G. J. Watumull head the concern. Los Angeles offices are maintained at 4040 Wilshire Blvd.

Excessive Freight Rates Bar N. M. Fluorspar from East

Cessation of fluorspar shipments from New Mexico firms to the Eastern part of the United States is due to high freight rates and low import tariffs, declared George E. Warner, president of the New Mexico Miners and Prospectors Association.

Mr. Warner explained that low tariffs permit mining concerns in Germany, Spain, Mexico, Canada and the Union of South Africa to ship fluorspar to Eastern markets at a lower cost than is possible for mine operators in New Mexico. As a result Western producers have been forced to discontinue shipments to destinations east of the Mississippi River, although the action has cost them the steel and glass plant markets in Illinois, Pennsylvania, Delaware and New Jersey. According to Mr. Warner, it costs $15.39 to ship a ton of fluorspar from a point in New Mexico to Pittsburgh, not counting the 3 percent federal transportation tax.

At the Zuni Milling Company, headed by Mr. Warner, 50 percent of the plant's personnel has been laid off. Of the 116 fluorspar mines operated in New Mexico during World War II, said this operator, probably not more than half a dozen are still in business.

General Refractories Issues New Volume on Refractories

Refractories, a new publication of the General Refractories Company of Philadelphia, Pa., supplies the little publicized but large and important refractories field with a handbook of complete, accurate and up-to-date information. It is intended for distribution to refractories consumers and those who design and construct equipment employing refractory materials.

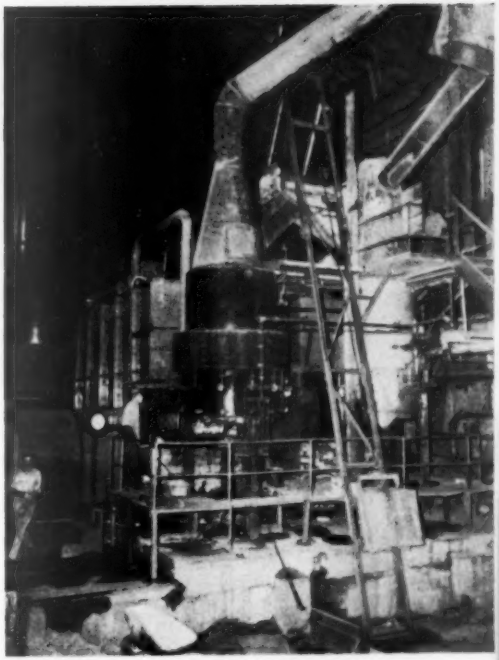
Beginning with a brief but interesting history of refractories from the sun-dried brick of old Egypt to the modern all-basic open-hearth steel furnace, and including a history of the General Refractories Company, the book takes up every phase of refractory practice.

Perhaps as important as any other section of this refractories handbook is the glossary which defines, in some cases for the first time in print, the meanings of many terms used in this industry. A complete index facilitates reference to any desired information. Price, $5 per copy.

Superior Insulation Introduces Improved Dark Mineral Wool

another ON THE SPOT report

THE Superior Insulation Mfg. Co. of Duluth, Minn., has recently expanded its mineral wool plant from 24 to 60 tons per day. More important than the increased production capacity—to Superior's customers at least — is the successful introduction of a new dark wool



• A view of the two mineral wool furnaces operated by Superior Insulation Manufacturing Company, Duluth, Minn. When both cupolas are in operation, the plant can produce approximately 60 tons of wool per day.

By EDWARD BRUNENKANT

product that offers improved fiber quality over its standard white rock wool. In home insulation, a 40-lb. bag of dark slag-wool will cover 30 sq. ft. of 4-in. fill, as compared to 24 sq. ft. for the same quantity of the white product. In addition, the dark wool fibers have a wire-like resiliency which is said to resist matting much more effectively than the white.

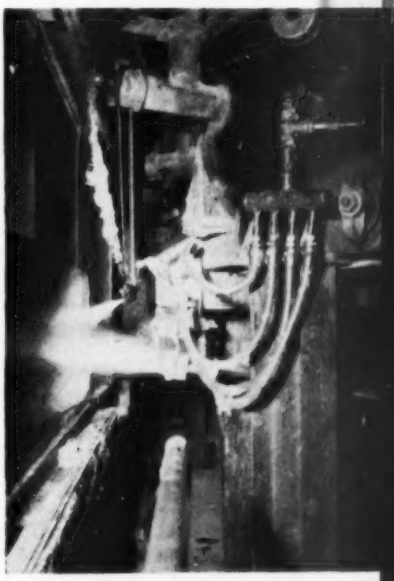
Duluth is an ideal location for Superior Insulation because all of the raw materials necessary for the production of mineral wool are close at hand. Coke graded in sizes from 2½- to 4-in. is trucked in from the nearby Pickans-Mather ovens; white slag, 2½- to 4-in., and dark slag (high iron content), 1½- to 3-in., from the local steel mills; and trap rock 1¼- to 2-in., from a Duluth quarry. Good operation demands that the overall content of fines for a cupola charge be held to less than 15 percent.

The materials are proportioned by weight and loaded into a skip hoist which elevates and empties the charge into the top of the cupola. A switching arrangement operated from either the ground floor or the charging platform permits charging of two cupolas with this one skip hoist. Normally the skip hoist is alternately loaded with stone and coke although the ratio of stone to coke in the cupola is held near 6½ to 1. A typical batch for white wool consists of 1200 lbs. of stone plus 75 lbs. of silica rock (99 percent SiO_2); for dark wool: 850 lbs. of white slag, 200 lbs. of dark slag, 300 lbs. of trap rock, and 50 lbs. of silica. Without the addition of silica, the melt would revert to slag, instead of changing into mineral wool. Approximately 200 lbs. of coke is added to each batch.

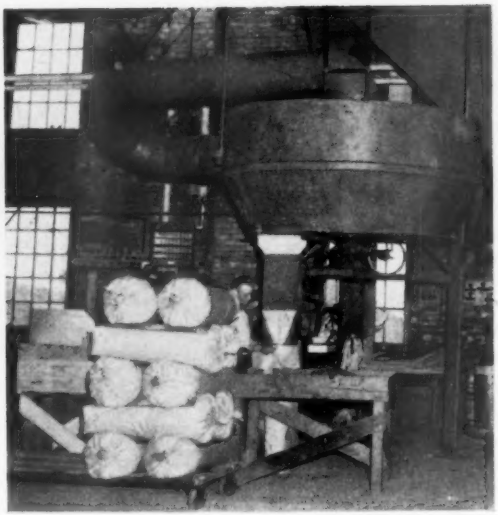
The melt is carried out at temperatures of around 2500 deg. F. and the molten rock discharged through a 2-in. hole in bottom of the cupola, dividing into two streams. Each stream is subsequently split in 3 smaller streams, now six in all, and passed over blow caps. Essentially, these caps consist of V-shaped cast-iron spigots slotted to admit 90 lbs. of steam, which blasts the molten material into mineral wool.

The temperature of the melt within the cupola is regulated through Foxboro controls, which automatically raise or lower the amount of air blown into tuyeres. Each cupola has eleven 3-in. tuyeres spaced equally around the periphery and

• Left: Superior's young plant superintendent, Mike Kovack, who is primarily responsible for the successful development of a new dark mineral wool.



• Right: The molten melt is blasted into wool fibers with a steam jet under 90 lbs. pressure.



• Newly formed fibers are pulled out of the annealing chamber on a slow-moving screen conveyor and pressed together, for easier handling, with a hollow steel roll.

• Right: A view of the two-spout bagging machine. The wool is packed in 40-lb. paper bags.

about 2 ft. from the bottom. In normal operation air is introduced through these tuyeres at the rate of 1700 c.f.m.

Atomized annealing oil is introduced at the steam jets in order to suppress the dust and to make the product easier to handle. The force of the steam blast carries the newly formed fibers into blow chambers, where they settle onto a slowly moving steel screen conveyor. An exhaust fan removes the steam and hot air from the chamber and at the same time creates a down draft which hastens the settling of the fibers.

From this point the wool is carried on a short canvas belt conveyor to a granulator in which the wool is shredded and broken up. The shredded product is elevated on a belt conveyor (the belt had to be fitted with 1¼-in. cleats because of the steep slope) to a trommel screen with 7-mesh openings. Here shot—the excess of slag that wasn't converted into wool—is removed. Material passing through the trommel falls down a pipe into a chamber where a cross blast of air hits the wool, carrying it into the bagging machine. This system of blowing the wool into the bagging machine was installed as an added precaution against inclusion of foreign elements in the finished product—the force of the air stream being strong enough to support only the wool and not heavier foreign particles, which drop through the chamber to a waste bin below. The wool is packed in 40-lb. double-wall bags closed at the top with a wire tie.

For every 100 lbs. of rock fed into the cupola, approximately 60 lbs. of mineral wool are recovered. Mike Kovack is superintendent.

Labor Developments

(*From page* 114)

was again available. Better pensions could be demanded from the government or from the employers. This time, realistically, there was practically no chance of getting such improved pensions from the government, whose policy was determined by the Congress. The 80th Congress, which passed the Taft-Hartley Act, was regarded as hostile to labor and therefore unlikely to be sympathetic to labor's demands. In the 81st Congress not enough strength could be mustered to repeal or even modify the Taft-Hartley Act and hence was still regarded as a Congress which would be hostile to improving Social Security. The latter judgment may turn out to be wrong, since there is now some likelihood that at least the House of Representatives will pass legislation to liberalize the Social Security Act.

On the other hand, the labor movement had become strong over the years and the employers were prosperous. Under such circumstances, it was propitious to press the demands upon employers. And this is exactly what was done, with real success.

First the coal miners won their demands. Here there was a mixed situation because the original deal was made not with the employers but with the government which had seized the mines as an emergency measure and was operating them. But later the employers, in collective bargaining, increased their contributions to the fund munificently. It is interesting that this happened first in coal where, more than in almost any other industry, once a man goes into the mines he generally remains there all his life.

Many small and local unions followed the lead of the miners. Recently the auto workers have made their first big gain. And while the steel workers must first undergo a test of strength before their gains will be known, they have on the record a favorable report from the President's Fact Finding Board and *bonafide* offers up to 10 cents an hour from the companies.

Frequently the drive has been attributed to the notion that other leaders felt they had to do as well as John L. Lewis. While such inter-union rivalry cannot be underestimated, attributing the whole drive to this cause is superficial, indeed. The background outlined above should indicate that the pressure for pensions is an expression of a fundamental human longing for security which has a very long history.

With this background established, future discussions of some of the practical problems employers face in connection with pensions will be facilitated.

Northwest Magnesite's worn out electrical dust precipitator at its plant in Stevens County, Wash., is finally being replaced with a similar device. The old collector, which broke down during World War II, could not be replaced until now.

Mechanics, Techniques and Economics of Expanded Clay-Shale Aggregate Production

PART V—KILN BURNER REQUIREMENTS

By WOLF G. BAUER
Contributing Editor

THE subject of producing or developing a suitable quantity and quality of processing heat, especially within certain zones of the rotary kiln, is a subject always of keen interest and great importance. Especially so is this the case in heat-expanding clays where the quality of this heat plays such an important role, one that is particularly critical to processing costs, kiln capacity, and aggregate density.

Many operators have no doubt proven to themselves eventually that "any old burner" simply will not do. They have learned that copying one another's burners and firing methods has not always produced the expected results because of variations in raw materials and kiln design. Let us go back, therefore, to fundamentals which cover all fuels and most materials, and establish the requirements as well as the technique of firing rotary kilns for this particular process of clay expansion, and then apply these basic conditions to the various fuels available to the operator today.

The writer has presented in some detail the technique and design fundamentals of firing rotary lime kilns in a series of articles commencing with the October, 1947, issue of PIT AND QUARRY; and in a later issue (March, 1949), various burners and their characteristics were discussed and illustrated at some length. Much of this material applies fully in this industry also, and the reader is urged to review these articles as a backgroud study. It remains now to treat the subject specifically to the peculiar problems of bloating.

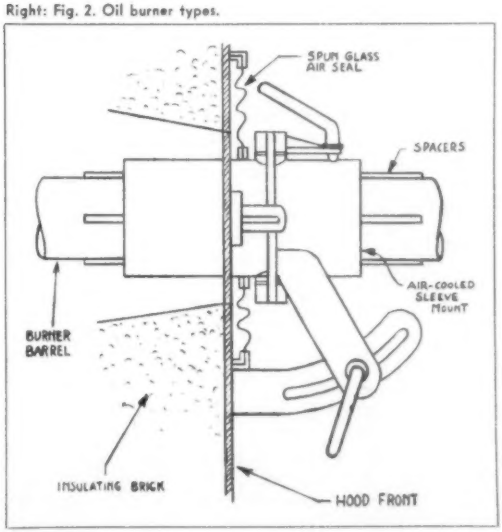
Burner Characteristics Most shales and clays suitable for heat expansion have a rather narrow firing range. Whether the material gives trouble in balling up in the kiln hinges on a number of factors. Kiln speed, flame temperature, material grading—these are some of the factors under control which influence this tendency. Thus under oxidizing or temperature differences between impinging flames and bloating material, the outside surface or shell of each piece will be of a different melting composition and therefore viscosity. When this viscosity is low, sticking occurs before expansion and gas evolution has been completed. In other material, or under other burning conditions, bloating takes place and is practically complete before the surface viscosity is lowered sufficiently to cause sticking. In any event, whether it be firing and processing conditions or factors inherent in the material. A proper flame design and production is a vital engineering phase in this industry.

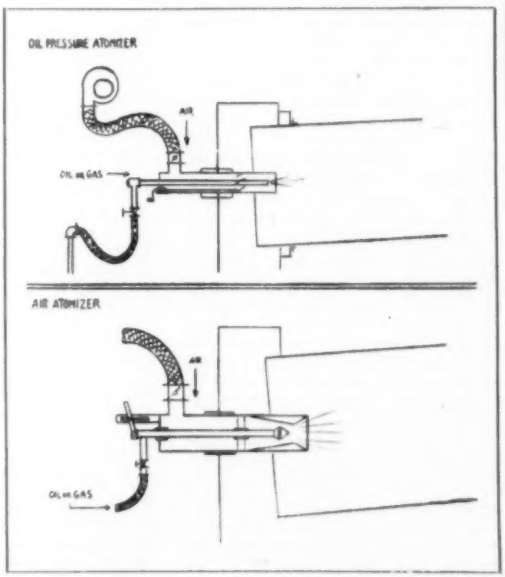
Burners must be flexible in some cases where the nature of the material requires constant and instataneous attention and control by the fireman, while in other operations, once the optimum flame and kiln conditions have been established, little but b.t.u. regulation is required.

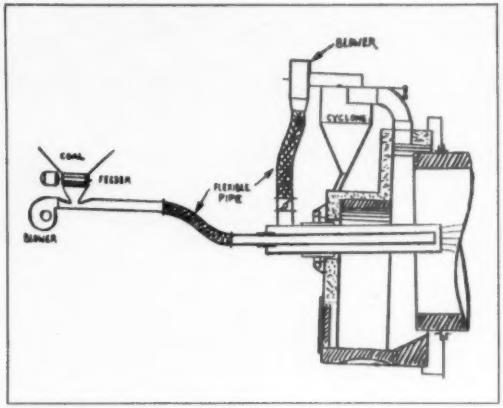
With the writer's advocated technique of using longer kilns set at low pitch, and rotated at very high speeds, flame length must be increased much more than is already indicated in most shorter kilns of today. The nature and quantity of the volatiles in the clay determine degree of oxidizing, neutral, or reducing conditions which the burner must create and maintain. If the material has a tendency to stick to the kiln lining, the flame shape and temperature must be such as to reduce this temperature

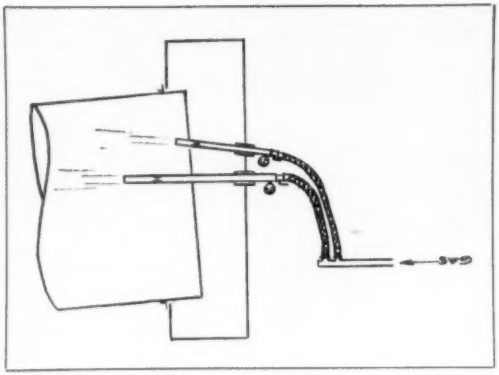
Below: Fig 1. Elements of a swiveled burner mount.

Right: Fig. 2. Oil burner types.









Left: Fig. 3. Pulverized coal burner.
Right: Fig. 4. Natural gas burner (non-aerated).

in the critical zone. In the way of operating economy also, the burner must have the minimum of primary air in order that maximum heat recuperation from the hot clinker may be achieved.

From an operational standpoint, the burner or burners must be able to stand kiln radiation heat, as well as oxidizing conditions of highly preheated air. They must be designed to move into any directional position with fingertip control similar to an artillery mount in certain instances. Burners should also be designed to allow quick retraction from the firing hood; they should be sealed against tertiary air infiltration, yet remain cool in their mounting sleeve. Changes in flame shape should be possible without changes in b.t.u. input or change in air-fuel ration. Fuel and air metering gauges must be provided to hold total air and fuel constant whenever either primary or secondary air volumes are increased or decreased. Figure 1 shows one type of burner mount.

Oil Burners Several types can be and are used. Older plants, especially those using process steam for curing block, etc., have used and are using steam atomizing nozzles. Steam will reduce flame temperature, but it is wasteful for many reasons. Air atomizing is applied with both high and low-pressure air, high air pressure being discarded due to excessive power demands. In the low air-pressure types, we can design the burner and nozzle for either high or low oil pressure. The writer has obtained good results both as to efficiency and flame control with both types. If burners are not designed and built new for the particular installation, so-called standard burners can be bought and slightly redesigned to conform to the kiln and process requirements.

Experience in firing rotary kilns for clay and shale expansion has indicated quite definitely that an oil burner designed and operated for luminous and long flame diffusion firing is not exactly suitable for starting up and heating up a cold kiln. It therefore becomes an advantage either to employ a more standard burner for this initial job, or to incorporate into the burner certain features which allow quick exchange of parts to switch from heating up to operating.

If a dual burner system is used, one of the burners only may have this feature.

In most cases, design changes involve decreasing the primary air orifices or annular openings, so that suitable mixture and carrying velocities can be maintained at the decreased air volme. Better provisions for barrel cooling must also be observed with lower air volumes. In most cases, turbulency of the air stream is decreased. This also holds for the fuel stream. Spray and fuel-air mixture emergence cones are narrowed for longer flame streams. Special types of balanced universal-joint-type barrel mounting for instant and accurate positioning are called for, as well as flame-proof flexible seals.

Pulverized Coal Burners Many of the fundamental design points applying to oil burners can be incorporated here also. Flame shape is not only tied up with turbulency, but unlike gas burners, and to some extent oil burners, mixture velocity and fuel fineness are closely related to length and temperature of the coal flame. Accurate positioning of the burner barrel during operation is dictated by lining and material requirements, and thus greatly aids control and kiln performance. The volatile content determines the amount of primary air, but in any case, the minimum is to be aimed for. Through the technique of diffusion radiant heat flame production with hot secondary air, long mild flames can be obtained with the minimum of primary air. The surrounding cover of this hot air not only reduces turbulency for slower combustion, but also takes over the role of carrying medium for the coarser coke particles which might otherwise drop out too early. The burner should be designed to allow some changes in flame shape without affecting the fuel-air ratio.

In pulverized coal burning, variations in the original fuel, as well as grinding and drying, introduce kiln temperature fluctuations. The science or art of holding the b.t.u. input constant is far from being universally mastered. In large and modern cement or lime plants sufficient expenditure for automatic regulation of these variables is warranted. This may not always be the case with the smaller expanded-clay plants, and so product quality is often dependent on the constant attention and skill of the firemen. (In a later article the pros and cons of automatic *versus* manual control for this process will be fully discussed.

Adapting then the coal burner to the process, changes for luminous flame firing would be similar to the designs illustrated in the writer's article in the February, 1948, issue of Pit and Quarry, page 100. See also the present illustration under Figure 3.

In instances where moisture in coal varies considerably and is high, where coal is of low b.t.u. content, and where grindability, size, and

quality may change often, it is of distinct advantage to dry and grind the coal independently of the kiln requirements, introducing the dry pulverized coal to the kiln with the minimum quantity of cold dry air. The following advantages obtain with this method:

1. Minimum primary air allows for higher heat recovery by the secondary air in the cooler.
2. This primary air is independent of air requirements for either drying or separation in the mill, and therefore allows optimum flame shape adjustments.
3. Higher volatile content and denser, aid-coal emulsions create longer flames.
4. Coal moisture is not carried through the kiln, which saves on draft power and b.t.u.s to heat water to exhaust temperature. Dry air also increases the drying capacity in the kiln preheating section.
5. Short but often costly periods of down-time for adjustments and repair to the coal mill are eliminated.

Gas Burners Natural and producer gas are both quite suitable for this process. Producer gas, however, would come into question only in rare cases where the available coal is particularly adaptive to gasification, and where the ash might have deleterious effects on the clay and affect the bloating action or the kiln lining. Such gas would enter the kiln in the hot raw state; and the burner pipes must therefore be clad with refractories and insulation. Long mild flames can be achieved readily, although b.t.u. input is more variable than with oil or gas.

Natural gas burners are of many designs, and a large variety of venturi air or gas injection or separately-controlled air-gas mixing and proportioning arrangements are used. Since luminous flame firing is, however, the best type of heating for most materials in this industry, the natural gas burner should be designed along very definite lines. In principle, there is no difference between requirements and design of the low air-oil pressure burners discussed under oil burners, and these can be readily arranged for gas also. Flame shape, length, and temperature are best regulated by independent control of quantity, degree of mixing, and turbulency of gas and gas-air mixture issuing from the nozzle.

Two types of gas burners are advocated by the writer, one in which the minimum of primary air under pressure is brought into contact with gas under pressure, flame control consisting of instant mixture ratio changes, or length of mixing time. Mixture is controlled by air damper alone, while a connecting lever linkage controls the volume of both air and gas, once established, in a constant ratio.

A much simpler type is also advocated by the writer, one in which only pure, non-aerated gas is forced through the burner, suitable flame production resulting from manipulations in nozzle area changes, as well as cone angle. Flame shape and length can be varied without seriously affecting gas volume.

For this process, such as a burner is the simplest type possible, and the one that is most foolproof and allows highest heat recovery from the cooler. Two or three burners of this type are better adapted in a cluster (each one of a different size) than a single burner.

Burner Location Now with most standard burners on the market some lengthening of the flame can be achieved, but in most cases the burner should be designed or re-designed by the process engineer to fit the kiln operation technique and material requirements. Radiant flames of high heat-transfer must be produced which may be projected into the kiln for 30, 40 and even 50 feet. With some fuels that is relatively simple, but it can be done with all to a more or less satisfactory degree.

Aside from the design of the burner pipe itself, the kiln hood shape and the manner in which the hot secondary air enters the kiln and sweeps past the burner, there are additional factors affecting flames and heat production. If, for example, the burner is too short and does not extend far enough into the kiln, cross-current interferences are set up with secondary air, which causes unsteady ignition, tend to heat up the hood and seals excessively, and cause hot material to roll out of the kiln at high and wasteful temperature.

When a burner, such as an oil burner, produces a rotating fuel-air stream from its nozzle, this rotation should be in the same direction as that of the kiln, so that it opposes the direction of the cascading material.

Generally the flame itself should not impinge on either material or lining. This necessitates rather narrow flames which will inhibit ring formation.

In some of the shorter kilns currently still in operation, it may be necessary to use a dual burner system, in which case the best practice is to make one burner at least twice as large as the other, thus carrying ⅔ of the fuel. This larger narrow flame burner may extend into the kiln a considerable distance, and would be located in a central position with respect to the kiln axis, while the smaller burner of bushy flame is placed below and to the side in order to allow the operator to finish the treatment of the material during the last few minutes in the kiln.

Ordinarily burners are too short. Flames have a tendency to spread to the lining. At the usual point of ring formation, critical reducing conditions due to lack of oxygen prevail at the point of impingement with the lining. When this point is further restricted, this condition deteriorates quickly into a trouble spot. The cure then is flame control.

Gas burners may best be located and aimed at a lower level in the kiln, as there is no unburned fuel impingement as in coal or oil firing, and gas flames seem to have a tendency to rise quickly. On the other hand, pulverized coal must be projected free; and the burner, if located below the center of the kiln axis, must be pointed upward to produce a long coke-particle trajectory. Lining impingement at the flame end is to be avoided by narrow flames and fine grinding.

As for oil burners, thorough atomization is not at all prerequisite. In fact, the writer has achieved some of the most favorable flame characteristics with practically full fuel-oil streams pumped into the kiln. A small portion of oil dripping from such a stream onto the material bed has no unfavorable consequences.

In Part VI of this series, fuel efficiency will be discussed in some detail, after which the important subject of burning control requires a careful review in the light of modern practice.

New Restrictions Placed On Mexican Sulphur Industry

The Mexican government has tightened its sulphur mining laws for closer control of the commercially vital mineral. It cut the length of mining permits from 99 to 20 years, limited concessions to areas smaller than 1,000 hectares, and imposed a land rental to the government of 6 percent of the value of the sulphur mined. The 20-year leases will be renewable only once.

The new mining laws also provide that if oil is struck during sulphur mining operations, the government will decide whether the sulphur or the oil deposits are of greater value to the nation. The mining concessionaire will be permitted either to continue sulphur exploitations or will be repaid for his investment if the government takes over the well for oil operations.

Announce Eight Regional Directors in Reorganization of U. S. Bureau of Mines

THE reorganization of the U. S. Bureau of Mines, commented on editorially in the October issue of this magazine, established eight semi-autonomous regions, one for Alaska and seven in continental United States. Primarily designed to improve all phases of Bureau work through delegation of maximum responsibility for operations to field offices, the new plan will give the headquarters staff greater opportunities for planning and direction. Each of the eight regions will be headed by a regional director reporting directly to the Bureau director in Washington, D. C. Brief background outlines of the newly appointed regional directors follow:

JOSEPH H. HEDGES, recently appointed chief of the new Minerals Division in the U. S. Bureau of Mines, has assumed his duties in Washington, D. C. As chief of the new division Mr. Hedges will coordinate all work in ferrous metals, nonferrous metals, light metals, precious and rare metals, fertilizer minerals, and construction minerals. He will also establish research programs, determine where certain projects will be conducted, and supervise the preparation of special studies and reports on mineral commodities for governmental and private agencies.

In private industry, Mr. Hedges gained wide experience with copper and silver mining and smelting companies in the United States, Mexico and Canada. His first job as a mining engineer was with the Copper Range Consolidated Mining and Smelting Company at Trimountain, Mich., in 1905. A year later, his mining career took him to Mexico, where he became associated with the Mexican Consolidated Mining and Smelting Company

James Boyd,
Director of the U. S. Bureau of Mines

at Guanacevi, Durango, Mexico (1906-1910). Other posts in Mexico were as superintendent of the Pinguico and La-Luz silver mines of the Guanajuato Development Company at Guanajuato, and chief engineer with the Moctauzoma Copper Company at Naczori, Sonora, Mexico.

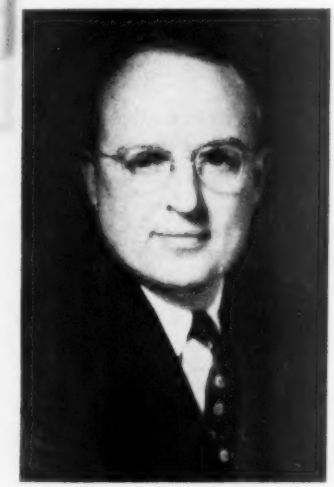
Returning to the United States in 1916, Mr. Hedges was a mine foreman at a copper mine at Jerome, Ariz., and then general superintendent of the Prince Consolidated Mining and Smelting Company at Pioche, Nev. Before entering the service of the Bureau in 1926, he was a field engineer with the Mining Corporation of Canada for two years.

A native of Lansing, Mich., Mr. Hedges graduated from Michigan State College with a B.S. degree in mechanical engineering in 1903, and from Michigan College of Mining and Technology with the degree of Engineer of Mines in 1905. He is a member of the Institute of Mining and Metallurgical Engineers.

SINCLAIR H. LORAIN, a mining engineer with many years' experience in Alaska, has been appointed regional director of Region I, with headquarters at Juneau, Alaska. Region I comprises the Territory of Alaska.

A mining engineer by profession, Mr. Lorain has been chief of the Albany, Ore., Branch of the Mining Division of the Bureau for nearly five years. Associated with the Bureau since 1936, he also served as district engineer of the Moscow, Idaho, field station of the Bureau. During the war, Mr. Lorain was in charge of the Alaskan War Minerals Program.

STEPHEN M. SHELTON has been appointed regional director of the Northwest region. Known as Region II, the Northwestern area includes Washington, Oregon, Idaho and Montana. Regional headquarters will be at Albany, Ore., where Mr. Shelton formerly served as chief of the metallurgical branch at Albany, Ore.



S. M. Shelton, Region II

H. C. Miller, Region III

J. H. East, Region IV

Widely known for his work on a process for making electrolytic manganese, Mr. Shelton has had extensive experience both as metallurgist and administrator. As chief of the metallurgical branch at Albany, he directed research in the production of metallic zirconium—from the ores in the beach sands of the Northwest—and directed studies of carbothermic magnesium, high phosphorus ores, electrolytic zinc and nonmetallic minerals.

HAROLD C. MILLER, who has been supervising engineer of the Bureau of Mines petroleum field office at San Francisco, Calif., has been appointed regional director of Region III. Headquarters for this region, designated as the Southwestern Region, will be established at San Francisco. Mr. Miller will supervise all Bureau activities in the states of California and Nevada, reporting directly to the Bureau director in Washington.

Mr. Miller has been with the Bureau continuously in the San Francisco office since his appointment as assistant petroleum engineer in June, 1923. Qualified not only as a petroleum engineer, but also in mining and geology and in safety work, Miller has been supervising engineer of the San Francisco office since the retirement of C. P. Bowie in April, 1946.

JOHN H. EAST JR. has been appointed regional director of the Bureau of Mines in Region IV, the Rocky Mountain area. Associated with the Bureau since 1939, Mr. East has been engineer-in-charge of the subdistrict office of the Health and Safety Division at Denver, Colo., since February, 1948. Region IV, with headquarters at Denver, covers Wyoming, Utah, Colorado, Arizona and New Mexico.

Born at Rising City, Neb., Mr. East was graduated from the Colorado School of Mines with the degree of Engineer of Mines in 1910. Employed for several

Dr. C. W. Seibel, Region VI

years as mine engineer and assayer for various operations in the Western states and in Durango, Mexico, he joined the Mine Rescue Service of the Bureau of Mines in 1914. After 18 months with the Bureau, he was employed by the Oliver Iron Mining Company at Hibbing, Minn., where he was in charge of safety work for the Hibbing and Chisholm Districts.

PAUL ZINNER, formerly chief of the Minneapolis, Minn., Mining Branch of the Bureau of Mines, has been named regional director of the North Central region. The new administrative division, known as Region V, includes North Dakota, South Dakota, Nebraska, Minnesota, Iowa, Wisconsin and Michigan. Regional headquarters will be at Minneapolis, Minn.

Mr. Zinner received a Bachelor of Science degree from the Polytechnic College of Engineering at Oakland, Calif., in 1933. Before joining the Bureau, he was employed for several years as mining engineer by the Anaconda Copper Mining Company at Butte, Mont., and by other private companies. Since 1945, Mr. Zinner has served as the Bureau's representative on the Missouri River field committee, charged with the coordination of all Department of the Interior activities in that great drainage basin. Mr. Zinner is a member of the American Institute of Metallurgical and Mining Engineers.

DR. CLIFFORD W. SEIBEL, of Amarillo, Tex., former supervising engineer of Bureau of Mines helium plants, has been named director of Region VI. Amarillo, Tex., will be the headquarters for Region VI, designated as the South Central region and comprising Kansas, Missouri, Oklahoma, Arkansas, Louisiana, and Texas.

At the same time, Dr. Seibel will continue to represent the Bureau of Mines on the Department of the Interior Southwest Field Committee, which he has served for the past year. This important committee, composed of a representative of each Interior Department agency, meets periodically to insure that departmental activities are integrated and internally consistent, and are appropriately related to the programs of other federal, state, and local agencies of government in the region.

Dr. Seibel, one of the world's leading authorities on helium extraction and helium-plant construction, has been associated with the Bureau's helium program in both research and important administrative positions continuously since his appointment in charge of helium field investigations in 1917.

HAROLD P. GREENWALD, recently appointed a Bureau of Mines regional director with headquarters at Pittsburgh, Pa., has assumed his new duties in charge of all the Bureau's activities in an area defined as the Northeastern Region.

The Northeastern Region, or Region VIII in the Bureau's organization, extends from the west boundary of Illinois to Maine and from the Great Lakes to the northern borders of North Carolina and Tennessee. Included in it are the following states: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, West Virginia, Ohio, Indiana, Illinois and Kentucky. It also includes the coal-to-oil demonstration plants at Louisiana, Mo.

For the last 10 years Mr. Greenwald has been superintendent of the Bureau of Mines central experiment station at Pittsburgh. Previously he was supervising engineer of the Bureau's experimental coal mine at Bruceton, Pa. He has had an active role in developing and directing various research and experimental projects connected with the promotion of health and safety in the mineral industries, and the better utilization of coal and minerals for steel production.

O. C. Ralston, chief metallurgical engineer

E. D. Gardner, chief mining engineer

Twelve States Pass Legislation Increasing Workers' Compensation

BILLS liberalizing workmen's compensation laws have been widely enacted by state legislatures this year in continuation of a trend which has spread rapidly in recent years.

Although complete data are difficult to obtain at this time because of the large number of bills relating to workmen's compensation which flood state legislatures, a survey reveals that states enacting bills boosting benefits or otherwise liberalizing such laws include Alabama, Montana, New Jersey, Ohio, Pennsylvania, Rhode Island, South Dakota, Tennessee, Vermont, West Virginia, Wisconsin and Wyoming.

Alabama's legislature enacted a measure calling for an increase in workmen's compensation payments to $21 per week and an increase in maximum payments from $6,000 to $8,400. It also raised medical and hospital payments.

A bill providing for a $2.50 weekly increase in workmen's compensation benefits was enacted in Montana. Under the new law, the maximum will be $20 for a single man and $26 a week for a man with five or more dependents. Another new Montana law increased maximum medical aid and hospital benefits under the workmen's compensation act to $1,000.

New Jersey's legislature enacted a bill providing "full coverage" for workers under the workmen's compensation law. It extends workmen's compensation, either for injuries or death arising from employment, when such injuries or death arises from "compensable occupational disease." New Jersey law heretofore defined a specific list of occupational diseases which were compensable. That list is abolished by the new law, which defines compensable occupational diseases as follows: "All diseases arising out of and in the course of employment, which are due to causes and conditions which are or were characteristic of or peculiar to a particular trade, occupation, process or employment, or which diseases are due to the exposure of any employee to a cause thereof arising out of and in the course of his employment."

Enacted by the Ohio legislature was a bill boosting workmen's compensation benefits from $25 to $30 weekly and increasing death payments from $7,500 to $8,000.

Maximum weekly workmen's compensation benefits have been raised in Pennsylvania from $20 to $25. The new Pennsylvania legislation also boosted occupational disease benefits 15 percent, and increased allowances for medical services from 60 to 90 days and from $150 to $225.

A number of bills related to workmen's compensation, including one adding to the list of compensable occupational diseases disability arising from silicosis and asbestosis, or disability arising from any cause concerned with the peculiar characteristics of employment, and repealing that part of the state law which provides specific and lower compensation for silicosis and asbestosis.

Passed by the South Dakota legislature was a bill raising the workmen's compensation ceiling from $20 to $25 a week, and boosting the minimum from $7.50 to $10.

A new Tennessee law increased workmen's compensation allowances from a lump sum maximum of $6,500 to $7,500 for total disability, and increased maximum weekly benefits from $20 to $25.

Vermont's legislature increased minimum weekly workmen's compensation benefits from $10 to $12 and the maximum from $20 to $25. It also doubled hospital and medical benefits, raising the ceiling from $375 to $750.

Enacted in West Virginia was a bill increasing weekly workmen's compensation benefits from a maximum of $18 to $25, widows' benefits from $30 to $50; it also makes occupational diseases other than silicosis compensable.

A bill enacted in Wisconsin increased maximum workmen's compensation weekly benefits from $28 to $33.55. It also increased payments for death or major injury.

The Wyoming legislature also approved a bill increasing benefits. The new liberalizing law was described by its sponsors as the most important piece of Wyoming legislation affecting workmen since the original enactment of the state workmen's compensation act in 1915.

An Idaho bill which would have broadened provisions of the state's present silicosis law and added other respiratory diseases as compensable under the state workmen's compensation act was vetoed by Governor C. A. Robins, who pointed out that other legislation provided for an interim legislative study of Idaho workmen's compensation and occupational disease laws.

Bills to liberalize workmen's compensation in various respects were still pending in several states at this writing.

Proposals to broaden workmen's compensation statutes to include employees of small firms now exempt were introduced in a number of state legislatures, but no new enactments of such bills have been reported thus far this year.

Tom, Dick and Harry Get The Low-Down on Marquette

Something new and unique in simplified annual reports was mailed recently by the management of the Marquette Cement Manufacturing Company to the homes of all employees of Marquette and its subsidiaries.

Designed to make company financial statements understandable and attractive to all, this special report on the cost of and returns from 1948 operations is presented in colorful comic-book format. Entitled *Tom, Dick and Harry—the Marquette Team*, the report brings out the facts in lively running continuity in conversation between characters representative of wage-earner, management and investor groups.

Printed in four colors, readability and understandability of the 16-page report is further increased by breakdown of all figures to a per-employee basis. Thus a high degree of personalization is achieved in each item.

Autobiography Tells Story Of LeTourneau's Career

A vivid record of the life and accomplishments of R. G. LeTourneau, president of the company which has four manufacturing plants located in the United States and one in Australia, is told in a new biography just off the press: *Moving Heaven and Earth* (The Story of R. G. LeTourneau).

It traces the career of a man whose inventiveness created machines which have revolutionized the earthmoving world. Written by Donald F. Ackland of London, who flew 16,000 miles with Mr. LeTourneau in the course of assembling material for this book, *Moving Heaven and Earth* contains many interesting anecdotes and incidents which reveal the industrial and spiritual philosophies of this manufacturer of high-speed rubber-tired construction equipment. Published by Iverson-Ford Associates, New York.

Officials of the National Sand and Gravel Association recently issued the 1949 edition of the *Year Book*, which contains a list of officers, members of the board of directors and active and associate members. The book also carries a brief account of the association's work since its organization 33 years ago.

personal mention

KENT JANDER, chemical engineering graduate of the University of Virginia, was recently added to the staff of the National Lime Association. His efforts with N.L.A. will be largely concentrated on the field of trade wastes and water treatment.

Kent Jander

W. C. Knapp

WILLIAM C. KNAPP, controller of The Arundel Corporation, Baltimore, Md., has been elected president of the Baltimore Control of the Controllers Institute of America.

At the annual meeting of the organization's Buffalo Control, PAUL J. KREMER, assistant secretary and controller of The Buffalo Slag Company, Inc., was renamed a director.

D. B. HENDRYX, who has been chief engineer for Harbison-Walker Refractories Company for the last 21 years, recently resigned from this position, in order to establish his own office for engineering and consultant work. Mr. Hendryx will also do some consultant work for Harbison-Walker.

R. P. SNYDER, who has been associated with Harbison-Walker Refractories Company and the Northwest Magnesite Company for the last 16 years, will succeed Mr. Hendryx as chief engineer.

ROBERT S. OGG has been named educational director of the Diesel Engine Manufacturers Association. He succeeds Ervin L. Dahlund, who resigned from this position on June 1 to become chief engineer of the diesel engine division of Fairbanks, Morse & Co.

R. S. Ogg

Mr. Ogg was formerly affiliated with the Lima-Hamilton Corporation, Hamilton, O., where he has been employed for a number of years in the engineering department.

A. J. DAWSON, chief marine engineer of Dravo Corporation, Pittsburgh shipbuilding and engineering firm, was a participant in the United Nations scientific conference on the conservation and utilization of natural resources.

Mr. Dawson was appointed by U.N. Secretary General Trygve Lie to the panel on navigation and flood control for inland rivers and canals, one of six major topics scheduled for the conference.

Mr. Dawson, an outstanding authority on river vessels, is the author of a paper, *The Development and Economic Potential of Inland Waterways Transportation*, presented recently at the first Pan-American Engineering Conference in Rio de Janeiro.

HORACE M. ALBRIGHT, president of the United States Potash Company, was recently elected chairman of the National Minerals Advisory Committee, succeeding Donald H. McLaughlin.

WALTER HULL ALDRIDGE, president of the Texas Gulf Sulphur Company, was elected to receive the John Fritz medal for 1949, the highest award in the engineering profession, it was announced today by Edgar M. Hastings, chairman of the John Fritz Medal Board of Award.

Mr. Aldridge has headed Texas Gulf Sulphur for more than 30 years. He is a trustee of Columbia University, and the holder of the honorary degree doctor of science and other honors.

He is cited for the present award as "engineer of mines and statesman of industry who by his rare technical and adminstrative skills has importantly augmented the mineral production of our country and Canada."

The John Fritz Medal and certificate are presented "for scientific or industrial achievement" in any field of pure or applied science.

The following appointments and transfers of sales personnel have been announced by the General Refractories Company, Philadelphia, Pa.

ROGER W. BRADEN, formerly manager of the Detroit warehouse, has been reassigned as manager of the New York warehouse.

DEWITT C. CLEMENT JR. has been transferred from the Estimating Department to the New York warehouse. He will be a member of the warehouse sales force.

ALAN R. EAKINS will be transferred from the Estimating Department to the New York warehouse. He will also be a member of the warehouse sales force.

RICHARD H. LIGHTFINE has been transferred from the New York warehouse to the New York District Sales Office.

In addition, the following changes in personnel status became effective in the very recent past, as follows:

JAMES S. MCKELVY has been transferred from the Estimating Department to railway sales. He is temporarily assigned to the St. Louis office and will make his headquarters in Chicago after January 1, 1950.

WILLIAM C. NOBLE has been transferred from the Estimating Department to the Philadelphia district sales office.

KARL E. SPAETH JR. has been transferred from the New York warehouse to to the Pittsburgh district sales office.

RICHARD A. STEPHENS has been transferred from the New York warehouse to the Philadelphia district sales office.

Five promotions in top-level management of the Minnesota Mining & Manufacturing Company have been announced.

WILLIAM L. MCKNIGHT, president of the firm since 1929, has been elected to the newly created post of chairman of the board.

His successor to the presidency is RICHARD P. CARLTON, former executive vice-president in charge of research, engineering and manufacturing.

ARCHIBALD G. BUSH, former executive vice-president and director of marketing

R. P. Carlton

W. L. McKnight

and distribution, becomes chairman of the executive committee.

Two new executive vice-presidents have also been named. They are GEORGE H. HALPIN and HERBERT P. BUETOW. Mr. Halpin, former vice-president for sales, will continue to direct sales activities. Mr. Buetow, 3M's treasurer since 1939, becomes executive vice-president in charge of finance.

FORTUNE POPE, vice-president and treasurer of the Colonial Sand & Stone Company of New York City, who has also been managing Station WHOM, will now devote his full time to the sand business.

ARVIN S. WELLBORN, formerly with the United States Navy, Bureau of Yards and Docks, has been named managing engineer of the Pacific Coast Division of the Asphalt Institute, with offices in San Francisco, Seattle and Los Angeles.

Three appointments in the Operating Department of Universal Atlas Cement Company have been announced by L. M. Funderburg, vice-president, operations, of this U. S. Steel subsidiary.

F. A. Hennigan

Effective September 16, 1949, FRANCIS A. HENNIGAN, assistant to the vice-president in charge of operations, New York, was appointed plant manager at Hannibal, Mo.; ARTHUR P. LOTHROP, assistant plant manager, Leeds, Ala., succeeded Mr. Hennigan as assistant to the vice-president in charge of operations at New York; HERBERT W. DIECKMANN, chief chemist and inspector at the Northampton, Pa., plant succeeds Mr. Lothrop as assistant plant manager at Leeds.

Mr. Hennigan has been associated with the company since 1936. His early associations in various engineering capacities were with Blaw-Knox Co., American Bridge Co., Crucible Steel Co., and Carnegie-Illinois Steel Co. In 1936 he was engaged by Universal to work with a committee on manufacturing costs and other studies at the company's Buffington, Ind., plant. In the same year, 1936, he was appointed chief industrial engineer of the company. He was transferred to New York, in the same capacity, in 1939. Mr. Hennigan served in the U. S. Army from 1942 until 1946, when he was honorably discharged with the rank of major. He rejoined Universal as an industrial engineer in New York. In 1947, he was appointed assistant to the vice-president in charge of operations.

Mr. Lothrop was born in Framingham, Mass., attended grade and grammar schools in Glencoe and Winnetka, Ill., and is a graduate in Administrative Engineering of Lafayette College, Easton, Pa. He also did graduate work at University of Chicago.

Mr. Lothrop joined the operating department of the Universal Atlas company in 1942 as industrial engineer and went to Leeds as plant engineer in 1944. In January, 1947, he was made assistant plant manager at Leeds, in which capacity he has served until his present appointment.

Mr. Dieckmann was associated successively with the Mason City Brick and Tile Co., Twin City Brick Co. of St. Paul and Northwestern States Portland Cement Company, Mason City, in various capacities as engineer and chemist from 1932 to 1935. He joined Universal Atlas in 1941 as chemist at Northampton, Pa., where he was appointed assistant chief chemist in 1943 and chief chemist and inspector in 1946, a position he has held until his present appointment.

FREDERICK W. KELLEY, formerly assistant superintendent of the North American Cement Corporation's plant at Catskill, N. Y., was recently appointed chief, succeeding SAMUEL L. GREENWALT.

obituaries

Funeral services for JOSHUA L. MINER, retired vice-president of the Lumnite Division of Universal Atlas Cement Company, United States Steel Corporation subsidiary, were held on October 9 in Plainfield, N. J. Mr. Miner died the previous Friday evening at the age of 67 years.

Mr. Miner joined the cement company in 1922, and in 1924 became identified with a subsidiary company, the Atlas Lumnite Cement Company, as manager of sales, production and research. In 1937 he was elected director and vice-president of that subsidiary. When the subsidiary became the Lumnite Division of Universal Atlas Cement Company, Mr. Miner was elected vice-president of the company, which position he held until his retirement in October, 1947.

For more than 30 years Mr. Miner was a member of Committee C-1 of the American Society for Testing Materials and also served on the society's executive committee. He was a member of the American Concrete Institute and was the author of several important papers on cement and concrete.

JOSEPH C. DOOLEY, 50, who was vice-president in charge of sales for the New York Trap Rock Corporation of New York City since 1937, died on August 30 at his home at Point Lookout, Long Island, N.Y. Mr. Dooley had been associated with the firm since 1919.

JESSE R. WRIGHT, co-owner of J. R. Wright and Sons of Dover, Tenn., died on September 28 after a heart seizure suffered the same day. Mr. Wright was also plant manager for the Tennessee Bleaching Clay Company of Paris, Tenn. He was 50 years of age.

MARSHALL MILLS, 72, president of the Victor Mica Corporation, Spruce Pine, N.C., died on May 30. He was active in founding this company. Mr. Mills set up the Boone forge used to make much of the wrought iron for the restoration of Williamsburg, Va.

HUGH L. BEAVIS, 72, formerly engaged in the sand and gravel business in Cleveland and for many years known as Cleveland's "unofficial city planner," died on September 28. He entered the sand and gravel business before the turn of the century and did grading contracts on railroad and highway construction. He drafted plans for development of the Cleveland lake front and highway improvements.

HENRY N. MORRIS, 61, a former employee of the Keefner Sand and Gravel Company of Des Moines, Ia., died on August 10 at a hospital in that city after a protracted illness.

CHARLES B. BRYANT, who was formerly associated with the Alberene Stone Corporation on its sales staff, died in a New York hospital on August 10 after a long illness at the age of 59 years.

FRED J. HAUSLER, an executive of the Lake Sand Corporation, died in Chicago on August 23. He was the son of the late Martin Hausler, founder of the Great Lakes Dredge and Dock Company. Mr. Hausler was 60 years of age.

VICTOR P. BRADER, purchasing agent for the Keystone Portland Cement Company of Philadelphia, died on August 13 in Bloomfield, N. J., after an illness of two months. He was 70 years of age.

JAMES M. WATSON, traffic manager for Gypsum Lime and Alabastine Canada, Ltd., for the last 12 years, died on September 14 in Toronto, Ont., Canada.

LEE LOEB, 53, president of the Warren Sand Company of Chicago, died on September 26 at Starved Rock, near Utica, Ill. Mr. Loeb was vacationing at the state park with members of his family when he was seized with an attack of coronary thrombosis.

JAMES E. SEGRAVES, superintendent of the Cayuga Lake Cement Company at Ithaca, N. Y., for more than eight years, died on September 20 at his home. He was 81 years of age.

FRANK W. PECK, president of the Peck-Woolf Sand and Materials Company, died on September 3 at a Kansas City, Mo., hospital after an illness of several months.

DAVID L. WILLIAMS, retired vice-president and general manager of the Pioneer Sand and Gravel Company, Seattle, Wash., died on September 20 after a protracted illness.

Mr. Williams was associted with the Martin Gravel Company in 1910 when it merged with two other firms to form the Pioneer Sand and Gravel Co. He continued with the concern until his retirement in 1935. He was 77 years of age.

COLLECT DOLLARS WITH SLY DUST FILTERS

BENEFIT BY SLY'S GREATER COLLECTING EFFICIENCY

This is a typical Sly installation. Literally, hundreds of similar installations are in use in connection with production of cement, crushed stone, agricultural limestone, gypsum, asbestos, talc, feldspar, fluorspar, gold, copper and iron ore, diatomaceous earth, bauxite, etc.

Sly Dust Filters collect dust generated in such operations as crushing, grinding, screening, conveying, loading, separating, and mixing—Saving valuable materials, adding to net income.

Sly Filters are saving money for their users by providing cleaner plants, better working conditions, greater production, less cleaning up (interiors, roofs, surroundings, etc.), and cleaner products, which sell better. Thousands of installations.

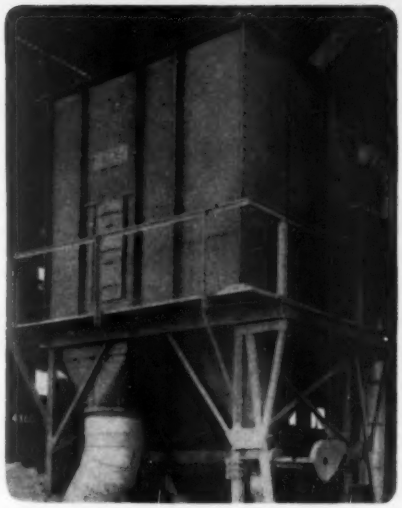


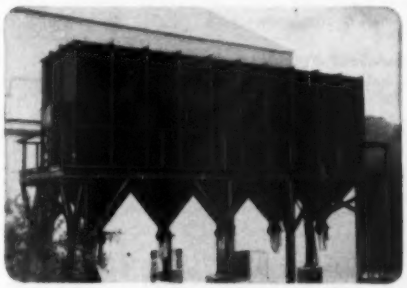
Illustration above shows a Sly Dust Filter in the pack house of a cement plant. Several dust pipes enter the fan side of the filter. The exhaust fan is located on the floor below filter. A screw conveyor automatically and continuously removes the collected cement.

NOT EXPENSIVE — SLY FILTERS SOON PAY FOR THEMSELVES

Sly Dust Filters get all the dust by filtration through cloth. They offer you:

1. **Greater filtering capacity because of more filtering cloth.**
2. **Taut bags (patented) save power and improve dust removal.**
3. **Bags more easily replaced.**
4. **Automatic control (any degree) minimizes or entirely removes the human factor.**
5. **Simpler shaker mechanism results in savings in maintenance and operation.**

IN BRIEF, THEY PROVIDE FAR GREATER COLLECTING EFFICIENCY



Sly Dust Filter in a rock crushing plant. Hundreds of plants in this industry are realizing better profits by using Sly Filters.

SEND FOR REVISED BULLETIN 98
Packed full of helpful information on dust control — photographs of installations, data on installations, etc. Tell us your problem so that we can write you fully. Benefit by the savings we can offer you.

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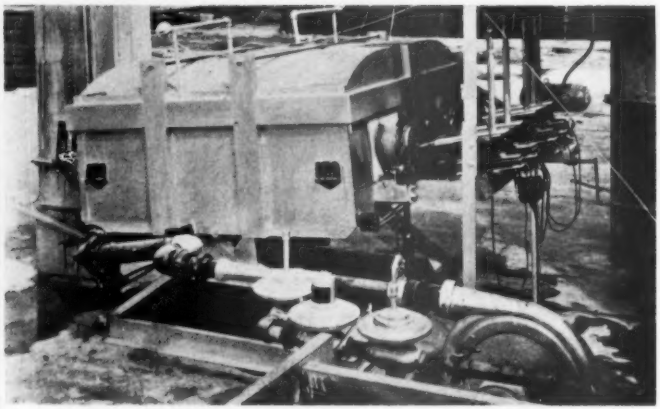
new machinery and supplies

PIT AND QUARRY



A new convertor incorporating design features which enable it to produce expanded perlite to exacting specifications for use in the building trades, industry and agriculture has been placed on the market by the Page Convertor Company, 710 North Cogswell Road, El Monte, Calif. The device consists of a unit of four stainless steel tubes rotating within a heating chamber. As the ore rolls through the revolving tubes, it is exposed to regulated and controlled temperatures of 1600 to 2100 deg. F. as required. Because there is no direct flame contact, explosion and shattering of the particles with resulting dust formation is eliminated and there is no fusion of hot particles into clinkers. The manufacturer adds that there is no ore which remains unexpanded.

● Low-Cost Prospecting Drill

Mobile Drilling, Inc., 960 N. Pennsylvania St., Indianapolis, Ind., has produced a new low-cost drill which may be mounted on a jeep and which utilizes the jeep's power takeoff. It can also be mounted on a truck or tractor. It drills a hole from 1⅝ inches up to 6 inches. (A larger model than the one shown permits the use of larger augers.)

The drill has a wide range of uses. It may be used vertically or, with an adapter, for horizontal drilling. It is ideal for prospecting for sand, gravel, stone and minerals, and it may be used for drilling shot holes to shoot overburden.

The Mobile Drill is furnished complete with mountings for vertical drilling. The horizontal mounting adapter is extra, as is hydraulic feed.

● A.C. Starter

A new line of manually operated starters for a.-c. motors up to 7½ hp. has been announced by General Electric's Control Divisions. Introduced to complete the line of G-E starters of this type, the new starters are specially designed for use on small pumps, blowers, and grinders.

Available immediately, the new starters are furnished in both toggle and push-button types in 2-, 3-, and 4-pole forms, Size 0 and 1. The toggle-operated types in the above forms and sizes are also furnished, if desired, with cast iron enclosures for use in wet, dust-laden, or hazardous locations.

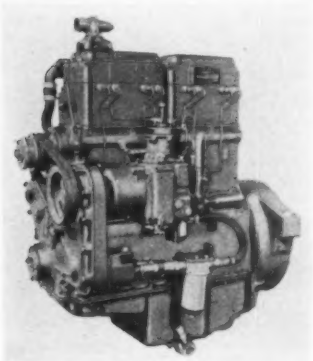
A feature of these starters is their bimetallic overload protection, which replaces the solder-pot relay and provides exceptionally accurate response to overloads. In addition, the starters are equipped with a wide range of heaters, all of which follow closely the motor heating curve. Positive indication of overload trip is assured by the toggle or push-button, which assumes a neutral position when the relay trips.

All starters in general purpose enclosures can be padlocked; the toggle type can be padlocked in both the ON and OFF positions.

This Model LGK2 "Little Giant" bucket loader, made by General Conveyor and Manufacturing Company, St. Louis, Mo., is shown working in a bank. Extended boom capacity is 1½ to 2 cu. yds. per minute, 35 hp. motor. The swivel spout permits a truck to follow or drive along the side of the loader. The loader may be equipped with a self starter, a bar screen in the chute, and a canopy over the operator. The Model LGW2 has the same capacity, but is mounted on pneumatic tires.

● Lightweight Diesel Engine

A new four-cylinder Cummins diesel engine with a maximum rated horsepower of 110 at 1800 r.p.m. has been placed in production by the Cummins Engine Company, Inc., Columbus, Ind. The addition of this new high-speed engine — designated the HR-400 — extends the line of Cummins diesels to 72



models for all types of automotive, industrial and marine applications requiring from 50 to 550 hp.

The new HR-400 is light in weight and compact in size. Mounting dimensions for the basic industrial model are 43 7/32 in. by 29⅜ in. by 47⅜ in.

The new HR-400 has a 5⅛-in. bore and a 6-in. stroke, and a piston displacement of 495 cu. in. It is a four-cycle engine, and is equipped with standard two-valve heads, a new increased flow lubricating system, continuous groove main bearings, and standard HR liners and head gaskets.

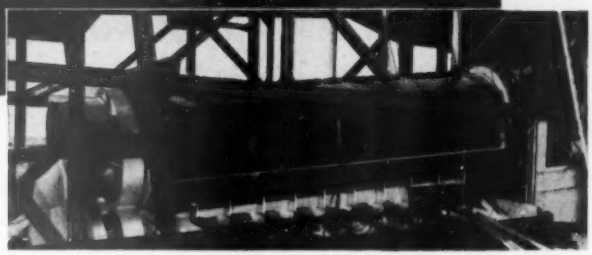
● Air Impact Tool

A new and larger air impact tool has been added to the Ingersoll-Rand line for extremely heavy bolting-up jobs, formerly handled, with considerable danger to the operator, by sledging or battering box wrenches.

Known as the "Slugger," the Size 588 impact tool is the largest of its kind manufactured and is rated up to 4-in. bolt size. It is believed that the device will have wide application in such installations as cement plants, large diesel and turbo-generator manufacturing plants, boiler and pressure vessel fabricators, etc.

The Slugger weighs 215 lbs. and has a free speed of 355 r.p.m., with 550 impacts per minute. Overall length to the shoulder of the anvil is 26⅝ in.

YUBA
ARS* SCREEN PLATES
with drilled holes
INCREASE DREDGE
EFFICIENCY



*ARS screen being installed on Yuba dredge in Montana.

YOU GET... *longer operating life and low replacement costs*

Yuba's Abrasion Resisting Steel** screen plates are made from high carbon, high manganese alloy steel with a Brinnel hardness of 200 to 250. Their resistance to abrasion means fewer shutdowns for screen replacement, giving you higher average running time and lower yardage costs.

Clean cut, closely spaced holes can be taper drilled in ARS* plate, enabling YUBA to design screen perforations to fit the exact needs of your property. Thus you get more efficient, accurate screening. To insure proper fit and reduce installation time, YUBA ARS* screen plates are rolled true and cut square to close limits.

Time Tested . . .

YUBA first tried ARS* plate in screens in a California dredge 10 years ago. They far outlasted rolled high carbon steel plates then used. You, too, can increase dredge efficiency and reduce your operating costs by using Abrasion Resisting Steel* screen plates. Order NOW. All usual thicknesses from ¼" up available from stock.

*United States Steel product.

for greater profit aim at . . .

a. High running time
b. High yardage
c. Clean product
d. Low operating costs

You get all four with YUBA bucket ladder dredges.

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● Diesel Crawlers

New, more powerful, "A" models of the International TD-18 and TD-14 diesel crawler tractors, are announced by International Harvester Company. Both the TD-18A and TD-14A, now in production, have greater work capacities than previous models, and incorporate a number of new features designed for increased operator comfort and longer trouble-free service life.

In the TD-14A (illustrated), third largest of the crawler line, horsepower has been increased to 76 at the engine flywheel; 60.5 drawbar, and 72 belt. With the added power, this tractor has higher maximum drawbar pull of 16,600 lbs. in first gear.

Both tractors feature spring boosters on the steering clutch hand levers; a closed cooling system preventing loss of coolant when the tractor is working on a steep grade; and oil filters which reportedly cut maintenance costs by greatly extending the usual oil change period.

Other newly-designed parts now standard in both the "A" models include crown-shaved transmission and final drive gears; spiral bevel gears; improved engine clutch hand levers; bonded clutch facings; dowel bolts in sprocket gears; split type steering clutch couplings, and steering clutch pilot bearings with staked nuts. Transmission gear shifts are equipped with a positive lock to prevent gear "pop-out" under heavy going. A glass water trap in the diesel fuel system permits operator or mechanic to determine service needed by a quick visual check. International Harvester Company, 180 N. Michigan Ave., Chicago 1, Ill.

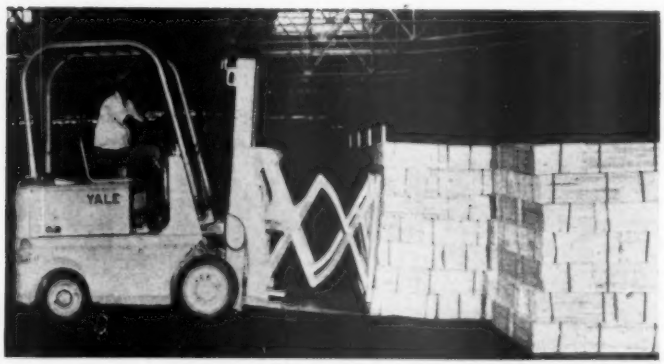
● Fork Truck System

Boxes, barrels, bales, drums, and cartons can now be handled in multiple units, *without the use of pallets*, by the application of Yale & Towne's "Pak-Loader" fork truck system.

This system comprises two components, namely fork trucks equipped with pusher mechanisms and two or three specially-adapted steel plates per fork truck.

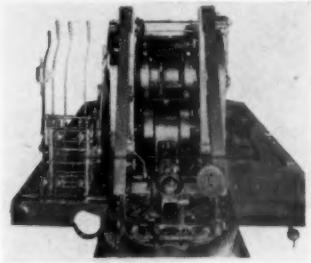
The steel plates are cut to the size which best fits the specific load to be handled. Legs about four inches high are secured to one end of the plate. When loading the plate, a block of wood is placed under the toe to keep it level. The forks of the truck slip under the plate for lifting. When unloading, the forks are tilted forward to rest the front end of the loaded plate next to the pile of goods already stored. As the pusher is extended, the truck moves backward. A locking device holds the steel plate on the forks and prevents it from being pushed off with the load. The plate is returned for reloading when the truck picks up another load. While the truck is taking a load to storage, or from storage to shipping, another plate is being loaded in readiness for the return of the truck.

The truck can also be used as a regular fork truck for handling skids and pallets when both pallet (or skid) and non-pallet non-skid operations are employed. The Yale & Towne Manufacturing Company, Philadelphia Division, Roosevelt Blvd. and Haldeman Avenue, Philadelphia 15.



● Combination Tagline Winder

Operating speed and resulting capacity of "Quick-Way" truck shovels and clamshells have been increased by the addition of a combination power dipper trip and automatic tagline winder.



This unit is engineered for all "Quick-Ways" now in service, as well as for new machines.

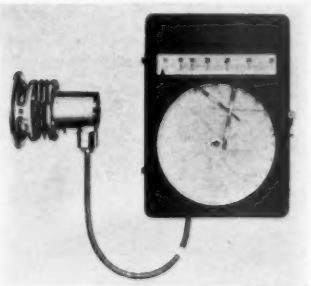
Advantages cited resulting from the use of the attachment as a tagline winder are: accurate loading and casting without moving boom or machine; automatic tagline pull; uniform, adjustable pull at and below machine level, and instant acting manual control.

The unit is quickly installed inside the "Quick-Way" cab, requiring no major changes. Available from the Quick-Way Truck Shovel Company, Denver, Colo.

● Radiation Pyrometer

The development of a new radiation pyrometer, known as the "Pyrovisor," has just been announced by The Bristol Company, Waterbury 20, Conn. The new instrument is designed for indicating, recording, or controlling temperatures up to 4000 deg. F. in furnaces.

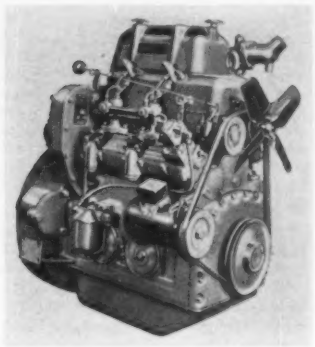
The Pyrovisor radiation unit, which is the temperature-sensitive head, is mounted on the outside of the furnace or kilns, away from the hot zone, and picks up radiant energy emitted from the surface of the object under measurement. In this way, actual surface temperature measurements of the work are obtained, rather than the usual furnace atmosphere temperatures.



● Lightweight Diesel

A two-cylinder, two-stroke, high-speed diesel engine that has lugging power (torque rating) and horsepower and an economical fuel rating is made by the Diesel Division of the Harnischfeger Corporation at Port Washington, Wis.

This new two-cylinder engine uses the patented P&H cylinder head and liner



assembly. The unit has a 4½-in. bore and a 5½-in. stroke; it is the heart of the P&H diesel. The cylinder head is interchangeable from one engine to another and is removable in a period of 40 minutes, speeding up maintenance work and reducing the cost on major overhauls.

Liners are of hardened steel alloy. The entire assembly is completely water jacketed and thoroughly cooled. Water travels upward in the liner and passes between each intake port, thoroughly controlling the temperature at that point.

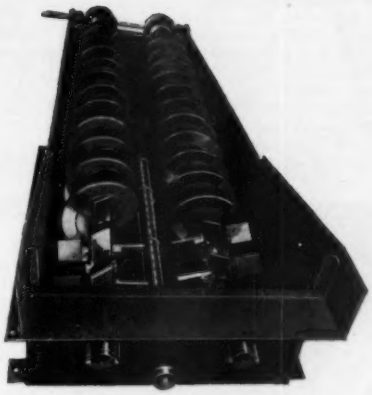
The intake ports are specially machined on a compound angle, sending the air from a root-type blower into the cylinder in a strong swirling motion, providing thorough scavenging of exhaust gases and complete combustion on the next stroke.

This engine is 28¼ in. wide, 40⅞ in. high and 32¼ in. long. Weight, complete with cast light metal alloy block is 1030 lbs., with a horsepower rating of 52.5 at 1400 r.p.m. This engine operates on a 16 to 1 compression ratio with a displacement of 174 in.

The injector and fuel injector pumps are standard makes. Each injector has a large spray hole to eliminate clogging difficulties. One injector for each cylinder is conveniently located for rapid change when necessary. The injector pump is demountable and easy to remove when necessary. These units are also exchangeable from one engine to another.

Carl D. Smith, who has been with Firestone Tire & Rubber Co., Arkon, O., for 26 years, has joined the LeTourneau Company as special representative of the sales division. He has been working in close collaboration with LeTourneau in providing tires in sizes and load-carrying capacities required for use on LeTourneau equipment.

Eagle Screw Type Gravel Washing-Dewatering Units are helping scores of producers to salvage material that was formerly unsalable—enabling other aggregates producers to work deposits contaminated with clay, loam, silt and debris.



"Put the Screws" ★ on Dirty Gravel!

WASH IT!

Several flights of paddles at the feed end of the unit slash through material loosening it up—clay, dirt, debris are washed up and out over the weir by water currents rising from bottom of tub. The aggregate, heavier, settles to the bottom, is picked up by screw flights and conveyed up to discharge. The material comes clean.

★ DEWATER IT!

As the material is conveyed upward toward the discharge end, water is wrung out—exclusive perforated flights speed the dewatering, if pit-run with sand content is involved. Usually Fine Material Screw unit with large settling basin afforded is required to handle pit-run, if retention of fines is desired. Unit pictured is equipped with Trash Remover tub end. More and more plants are "staying out of the red" with Eagle Equipment.

Eagle Iron Works, Des Moines, Iowa. Mail Coupon for More Information

Name .....

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Address .....

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☐ Log Washers for conglomerates
☐ Coarse Material washer-dewaterers
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133 Holcomb Ave. • Des Moines, Iowa

● King-Sized Cab

An outstanding feature of new "H" model GMCs, recently introduced by GMC Truck & Coach Division, General Motors, is a completely new king-sized cab, available on 700-980 conventional models, as well as all heavy-duty cab-over-engine models.

The driver's seat is the bucket type, form fitting, with individually wrapped

springs and snubbed action for controlled comfort. It is adjustable fore and aft over a 4-in. span.

Windshields and windows are wider and higher, offering 50 percent more vision. Rear quarter windows are standard, adding greatly to the ease and safety of trailer operation. Center rear windows are optional when desired for winch operation or other off-the-road work.

All-steel, welded construction makes the new cab several times stronger and safer. Shock-free, rubber-cushioned mountings insulate against frame twists and road shocks. Complete, scientific insulation against heat, cold and noise contribute further to a comfortable ride. A built-in ventilation system draws in a controlled amount of outside air and forces out used air.

Another unique innovation is a hinged panel opening from the engine side of the dash which makes for simplified inspection and servicing of instruments, electrical fuses, regulators and relays.

● Safety Hat

After more than a year of development work and rigid testing, the E. D. Bullard Company has announced a new crown for the famous "Hard Boiled" hat. The material is resin impregnated Fiberglas that under test has proved to be the strongest, most resilient crown ever built for a safety hat. This crown

is impervious to moisture and acids; it passes all dielectric tests; it is non-shattering, and non-deteriorating. Radiation tests show the Bullard white Hard Boiled hat maintained a comparative coolness—inside to outside skin temperature—that was 11.7 deg. F. better than any other safety hat tested.

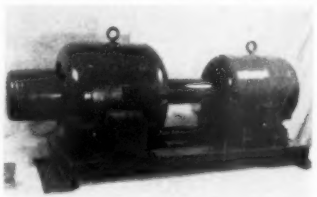
This hat can be supplied in practically any color desired. Standard colors are white and grey. The colors are permanent as the pigment is impregnated all the way through the material. This feature is of special interest to safety men in plants where work conditions require color for visibility. Colors may be used for identification of crews on large-scale operations. There is even a hat that glows in the dark for tunnel or mine workers, night construction crews and others. E. D. Bullard Company, 275 Eighth Street, San Francisco 3, Calif.

● Motor Generators

The Kato Engineering Company of Mankato, Minn., has recently announced a new series of motor generator sets.

These are available for changing d.c. to a.c., a.c. to d.c., or from one frequency to another frequency. Direct coupling drive is utilized where speeds can be the same. When changing from one frequency to another, it is usually necessary to use a V-belt drive. In these cases, an adjustable V-belt pulley is installed on the motor. This permits adjusting generator speed and frequency to any predetermined condition of load. The adjustable pitch pulley permits adjusting the speed rather closely to any predetermined desired loaded speed.

Variable pitch pulleys are also available that permit adjusting speed with motor and generator running. A special slide base is then furnished and the central distance between shaft centers is varied by a hand wheel. The variable pitch pulley automatically increases and decreases pitch diameter. Kato-



light engineers have recently developed a line of induction motors that run at synchronous speed; there is no slip. There is no change between partial load and full load. A silent chain or timing belt is used to transmit power from motor to generator.

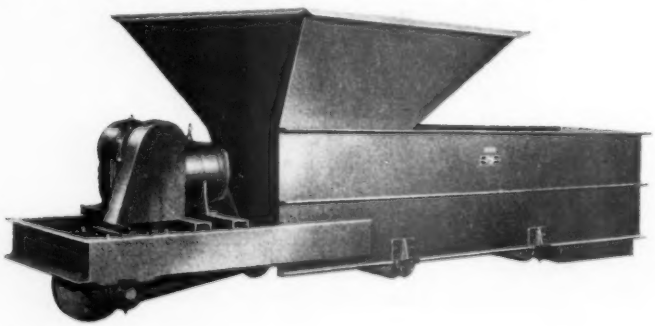
Many manufacturing industries today require other than standard frequencies and voltages for laboratory testing and for commercial testing. It is quite often more practical to offer standard 60-cycle-powered equipment and drive it with a motor generator set where the available power is of some other non-standard frequency voltage.

Katolight motor generator sets are available in sizes up to 300 kw., from 15 cycles to 400 cycles.

● Feeders for High Tonnages

For controlled, regular feeding of high tonnages, the Bonded Scale and Machine Company announces reciprocating plate feeders in widths to 4 feet. Capacities for coal range to more than 50 t.p.h.; crushed stone, gravel, and heavy ores are efficiently handled up to 225 t.p.h. The welded steel hopper consists of sheet and structural sections, and utilizes the reciprocating plate as the hopper bottom. This moving plate rests on two pairs of live rollers mounted on four ball-bearing pillow blocks.

There are three efficient ways of controlling the feed: changing the throw of the eccentric; altering the speed of operation; or regulating the sliding door in the forward wall of the hopper. These Bonded feeders may be purchased with or without the upper hopper. Hoppers of special design and other variations from standard will be quoted upon request. Bonded Scale & Machine Company, Columbus 7, O.



● Magnetic Separator

Dings Magnetic Separator Company, 4740 West Electric Ave., Milwaukee, Wis., announces a new permanent drum-type, non-electric Alnico magnetic separator, complete with shaft and V-belt

drive sheave, for automatic tramp iron removal. This magnet can be installed at the discharge end of chutes, spouts and conveyors for processing sand, feed, grain, rubber, and similar material.

Features include: the circumferential pole design for uniformity of the magnetic field across the drum width, and an adjustable dual-purpose leveler and burden feed control. The non-magnetic wear-and-abrasion-resistant manganese alloy steel drum shell revolves on sealed, self-aligning ball bearings, while the non-electric Alnico magnet inside the drum shell remains stationary. The non-magnetic material flows over the drum shell in a normal trajectory. The tramp iron holds fast to the drum by the magnetic pull, dropping off when it passes out of the magnetic field. No discharge aids are necessary. There is no drum shell wear from adhering tramp iron.

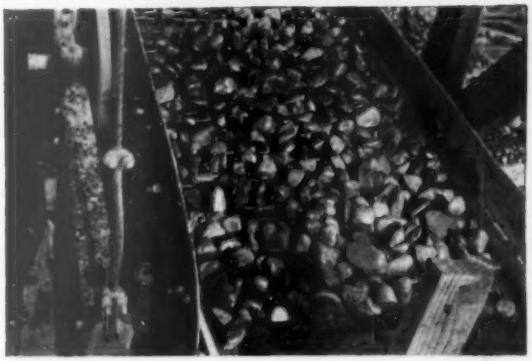
The separator is also available in Types FA and SA, which have the "Perma-Drum" fully enclosed. The housing is of all metal dust-tight welded construction, equipped with a completely-enclosed electric motor and speed reducer drive, and top and bottom flanges for quick installation in chutes and ducting. The Type SA Perma-Drum separator has a separate discharge spout for tramp iron.

A. Lawrence Stewart and Arthur L. Foltz Jr. have been assigned as sales representatives to the Allis-Chalmers district offices in Cleveland and Detroit, respectively.

Mr. Stewart joined Allis-Chalmers in 1942 after graduating from the Missouri School of Mines & Metallurgy, and has since served in various posts, with the exception of one year. Mr. Foltz joined Allis-Chalmers in 1941 after graduating as a mechanical engineer from Purdue University. He was associated with the company's steam turbine department for eight years.

"Trouble-free" screening is a habit with these SECO VIBRATING SCREENS"

says Sherman B. Saunders of
W. F. Saunders & Son, Nedrow, N. Y.



The Seco vibrating screen pictured above has been on the job over nine years in the modern sand and gravel plant of W. F. Saunders & Son, Nedrow, N. Y. Not only does it do a perfect job of screening—but it still operates smoothly and has never been shut down for repairs.

Here you see the second Seco screen in use in the Saunder's plant. This Seco screen was purchased because of the trouble-free performance record of the first one installed over nine years ago. Together they produce about 120 tons of sand and gravel per hour. Everywhere, on all types of screening jobs, from ag-line to rip-rap. Seco screens are winning acclaim on performance.

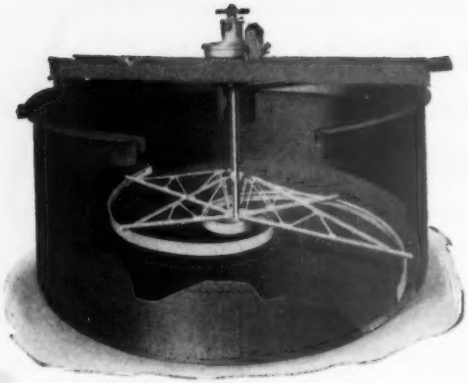
Let Seco screening experts help you get trouble-free screening results. Models to fit every requirement. Write Dept. L for new Seco Catalog No. 203.

SECO VIBRATING SCREENS

SCREEN EQUIPMENT CO., INC.

1752 WALDEN AVENUE **BUFFALO 21, NEW YORK**

In Canada, United Steel Corp. Ltd., Toronto, Ont.



"Scraper breakage me eye!"

Scraper breakage due to overloads is no longer a problem—at least not with the Hardinge "Auto-Raise" Thickener. An ingenious driving mechanism automatically lifts the entire scraping assembly upward when an overload occurs anywhere in the tank bottom. Another feature of this Thickener is its double-spiral scraper which removes settled solids rapidly—prevents "pile-ups". Write for Bulletin 31-D-8.

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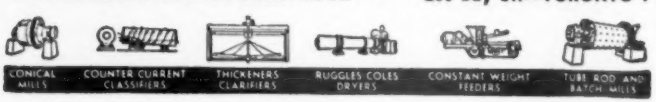


CONICAL MILLS | COUNTER CURRENT CLASSIFIERS | THICKENERS CLARIFIERS | RUGGLES COLES DRYERS | CONSTANT WEIGHT FEEDERS | TUBE ROD AND BATCH MILLS

● New Trailer Coupler

A 34-in. side-oscillating fifth wheel with machine-finished bearing areas, bronze bushings, and an entirely new

method of controlling oscillation, has just been announced by American Steel Foundries Automatic Division, Chicago, Ill. Built like a high-grade piece of machinery — with renewable wearing parts— it prevents damage from twisting strains on tankers and other trailers.

Sidewise tilting is controlled by two resilient rubber stabilizers under each side of the plate, which is free to oscillate, unchecked, 1 degree either way. From 1 degree to 3 degrees, the first stabilizer builds up a resistance of 5000 lbs. Here, stabilizer No. 2 becomes effective, and the combined resistance of both stabilizers reaches 10,000 lbs. at 6 degrees movement. Use of two independent cushioning elements makes control both gradual and positive, while preventing the over-compression of either cushioning member.

The manufacturers claim that this new coupler, called the "Dual-Control Side-Oscillator", is made tight and stays tight—without lost motion. Brackets are bored and bronze-bushed. Beam ends are nearly 3½ in. in diameter, machine-finished and with three grease grooves. The plate is held by a 2-in.-diameter bronze-bushed pin; and over 20 sq. in. of reserve bearing area is provided by the "boss and pocket" design. Three-point locking prevents accidental uncoupling, and the wheel has convenient side-operation.

● New Safety Switch

An all-new Type A safety switch, the HCI (High Capacity Interrupter) has been released to the market, according to an announcement by The Trumbull Electro Manufacturing Co., Plainville, Conn. Designed for use in modern high-capacity industrial distribution systems, the HCI switch has an entirely new arc-quenching design and actuating mechanism, both of which give it ability to break unusually heavy loads quickly and safely. When properly fused, the HCI also has the ability to withstand heavy short circuits without damage.

The unique arc-quenching feature of the HCI was made possible, Trumbull engineers explain, by a magnetic repulsion action. Arcs formed by double-break contacts repel each other and are driven against grid pins which cool and deionize them. The actuating mechanism provides positive quick-make, quick-break action by means of a roller-cam, multiplying linkage design combined with a powerful spring.

Its center-front operation, for instance, permits close ganging, thus conserves valuable installation space. Front

fusing allows a compact enclosure and yet leaves ample wiring space. Clear "on" and "off" markings are indicated both inside and outside the cover. Its poles are self-contained switching units and are thus easily maintained. The HCI's interior leaves no live parts exposed when switch is in "off" position and door open. Silver plating on its current-carrying parts prevents oxidation and gives low resistance contact.

HCI Switches are manufactured in 30-, 60- and 100-ampere sizes and are Underwriters approved throughout. Semi dust-tight enclosures are available.

● New Power Unit Series

Hercules Motors Corporation, Canton, O., has recently made available the DIX4B and DIX4D—as closed type power units. These are in addition to the automotive type mounting.

The Hercules DIX4 Series engines are built in two bore sizes. The Model

DIX4B is 3¼-in. bore by 4-in. stroke with a piston displacement of 133 cu. in. The Model DIX4D is 3⅝-in. bore by 4-in. stroke and has a piston displacement of 166 cu. in.

These engines are the solid-injection, compression-ignition, 4-stroke cycle type. they are designed for high-speed, heavy duty service and have exceptional torque characteristics which are maintained at a high level over a wide range of speeds. They start quickly and easily on fuel oil with a conventional electric starter.

Both models are equipped with pressure lubrication, with an oil pump mounted inside the oil pan. The main flow lube oil filter is attached to the cylinder block, thus eliminating outside lube oil lines.

The patented Hercules combustion chamber is designed for the complete mixing of fuel and oxygen. It is located at the side of the cylinder bore. The fuel injection system consists of an American Bosch individual plunger pump and Bosch pintle type nozzles.

Hercules DIX4 Series engines have five main bearings. The crankshaft is counterbalanced for smooth engine performance and Tocco hardened for greater tensile strength and to permit the use of high lead bronze steel-back bearings.

Add a BIG *SAFETY* FACTOR to your hoist

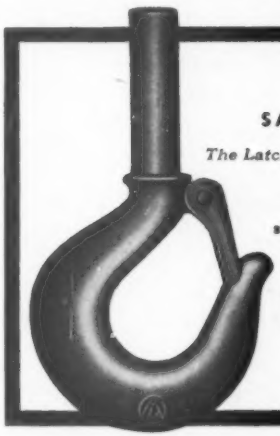
A Laughlin Safety Hook will boost the "safety efficiency" of your hoist many times . . . protecting workers against injury and equipment against damage from accidentally slipping loads.

Make sure your next Hoist is equipped with a LAUGHLIN SAFETY HOOK

Specify "Laughlin Safety Hooks" when ordering new hoists from your distributor. They pay for themselves many times over in accidents avoided.

Play safe — change over your present Hoist Hooks to LAUGHLIN SAFETY HOOKS

Order from your distributor according to the size now on your hoisting equipment . . . or state the capacity of your hoist and he will furnish the correct Laughlin Safety Hook to fit your needs.



LAUGHLIN SAFETY HOOK

The Latch Locks the Load

Drop-forged steel, heat-treated . . . stainless steel spring with pressed steel latch. Cast bronze latch on larger sizes. Available for ⅛ to 15 ton safe working loads.

There is a LAUGHLIN SAFETY HOOK for every HOISTING or MATERIALS-HANDLING JOB

3310
½ to 15 tons

3220
½ to 15 tons

3316
½ and 1 ton

3315
750 pounds

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THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS

Since I got this MICHIGAN, I've been able to handle a lot of the jobs around the country that I had to pass up before. That shovel gets to the job as fast as my trucks, and under its own power. It'll roll through city traffic without any trouble—and I don't have to worry about highway limits. Best of all, it'll pull in and out of any place the trucks can go. Yessir, my MICHIGAN is always ready to go—saves plenty of time too!

I looked 'em all over before I decided on MICHIGAN—and the way it has performed since convinces me that MICHIGAN is 'tops' as a money-maker.

DID YOU KNOW
you can buy
a brand new
MICHIGAN
TRUCK CRANE
complete with chassis
for as little as $10,250
F.O.B. factory?

Write for Bulletin 100, "*On the Job with* MICHIGAN"

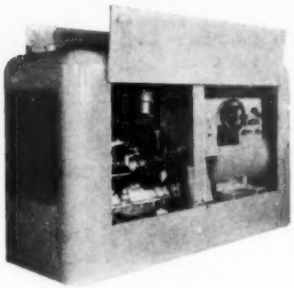
MICHIGAN

MICHIGAN POWER SHOVEL COMPANY
315 SECOND STREET, BENTON HARBOR, MICHIGAN, U.S.A.

● Heavy Duty Arc Welder

Air Reduction Sales Co., New York, N. Y., manufacturers of industrial gases and welding equipment, have announced the availability of a new heavy-duty arc welder. Known as the Wilson 36A "Yellow Jacket," this machine is built in 300- and 400-ampere sizes.

The unit is a d.-c., 40-volt, NEMA-approved, variable voltage generator. It features simplified control of current output by means of a sturdy hand-wheel



mounted on the control cabinet. Close calibration of the current dial eliminates the need for meters.

For instant recovery voltage over short circuit, the 36A generator is self-excited with excitation of the mainfield obtained through an auxiliary brush. Welding terminals are conveniently located and adequately spaced to prevent accidental shorting between the lugs of the welding cables.

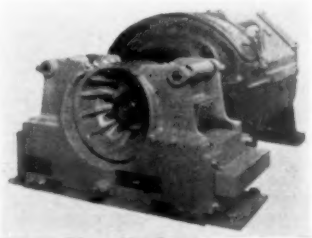
The "Yellow Jacket" 36A is a complete two-bearing unit, engine-driven by sheaves and steel cored V-belts. The belt drive reduces vibration problems in the field by automatically compensating for slight misalignments. Precision ball bearings equipped with double shields keep dirt out and hold grease in, providing maximum load safety.

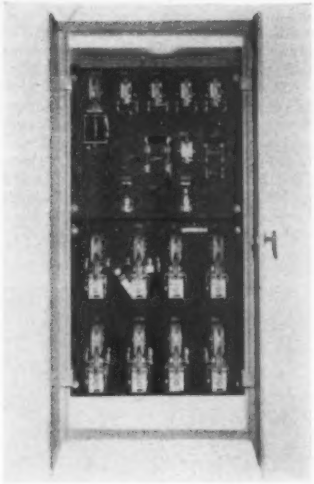
The 36A is powered by a sturdy six-cylinder industrial engine and is available in stationary or portable models.

● Brake and Hoist

Two closely related pieces of equipments, a new d.-c. two-shoe, two-magnet brake and a new d.-c. crane hoist control, have been announced by General Electric's Control Divisions.

The brake consists of a malleable iron frame, two self-aligning shoes which pivot on spherical bearings, two arma-





tures pivoting on sealed graphite bearings, two symmetrical E-type magnets with cast-in coils, and a ventilated wheel of molybdenum alloy. The iron frame fully protects all moving parts; universal ball joints protected by neoprene sleeves permit self-alignment of shoes and insure uniform lining wear; and a quick-release mechanism, which responds to a wrench, permits the removal of the wheel, horizontally or vertically, or changing brake linings without disassembling any part.

The cast-in coils, sealed in a heat-resisting insulating compound, are said to assure faster action, reduction of "stick-in" because of residual magnetism, protection from moisture reaction, and good heat transfer. The torque-setting indicator gives a direct reading of foot-pounds torque setting; and the clearly marked operating gap indicator provides a ready visual check on magnet gap and lining wear. The brake is applicable for right- or left-hand mounting, on the floor or on motors.

Designed throughout to operate smoothly and efficiently under the most severe conditions, the brake is easy to install, adjust, and service.

The new crane hoist control incorporates several unique features. It provides power hoisting and power dynamic lowering, depending upon the requirements of the load on the hook. The change from power to dynamic braking lowering is inherent in the control and hence is independent of either the operator or any particular control device. When decelerating, the speed is reduced automatically before the solenoid brake sets, thus minimizing brake maintenance.

In addition, both overshoot and down drift are eliminated. When the master switch is thrown rapidly from the OFF position to any lowering position, with a load on the hook, the motor speed does not overshoot; and since the first hoisting point will hold rated load with no downward drift, the master switch need only to be moved to the second hoisting point to lift the load.

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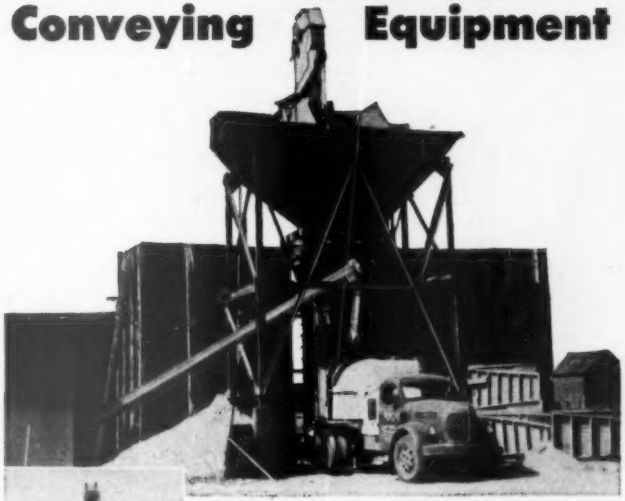
Baughman HI-SPEED

Conveying Equipment

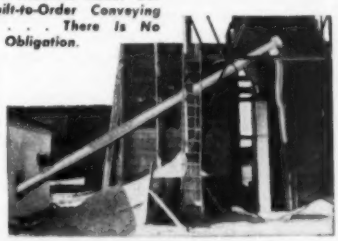


This Ready-Mix Plant gets peak capacity with Baughman *HI-SPEED* Bulk Materials Handling Equipment. Three Baughman units—the *HI-SPEED* Belt and Bucket Elevator for the elevation of sand and gravel to hoppers . . . the Auger Type Conveyor carrying cement from the building to the truck under the hopper . . . the Heavy-Duty Undertrack Unloader charging the Belt and Bucket Elevator . . . All work as a team to make a very smooth, quiet and economical operation with *HI-SPEED* performance. Baughman standardized production methods cut your equipment costs. Quality materials and expert construction minimize your maintenance expenses.

Write for Information About Our Special, Built-to-Order Conveying Equipment . . . There Is No Obligation.

MODEL 175 Belt and Bucket Elevator with Centrifugal Discharge Head

MODEL 190 Heavy-Duty Troughed Belt Undertrack Unloader



MODEL "Q" *HI-SPEED* Screw Conveyor

manufactured by

BAUGHMAN MANUFACTURING CO., Inc.

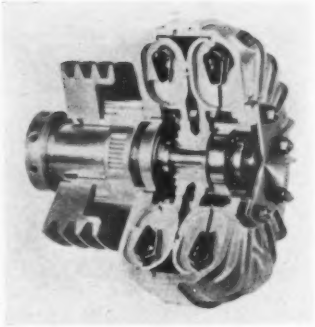
8119 ARCH STREET, JERSEYVILLE, ILLINOIS

● Hydro-Sheave Drive

The recently announced "Hydro-Sheave" drive, manufactured by the Twin Disc Clutch Company's Hydraulic Division at Rockford, Ill., is specially designed to be used with Worthington "Quick Detachable" sheaves made for SB and SD hubs.

Combining all the advantages of a fluid drive, this new Hydro-Sheave drive is said to offer the operator of small power units a low-cost conversion device no more difficult to apply than a Worthington sheave. It is applicable to electric motors and internal combustion engines in the ¾- to 25-hp. range.

The even acceleration and sustained smoothness of operation that result from the application of one of these hydraulic units is obtained by eliminating the solid connection between the power source and the driven equipment.



When combined with a Worthington QD sheave, the Twin Disc Hydro-Sheave drive is an integrated power transmission package, which is complete with installation instructions, parts drawings, parts list, and a single wrench required for mounting. The Twin Disc small aluminum hydraulic coupling is filled with hydraulic fluid and all bearings are lubricated for life.

● Three smiles and a big "100" add much to the picture of the 100th model of the 3030 "Double Impeller Breaker" produced by the New Holland Manufacturing Company, New Holland, Pa., in three years.

● Conveyor Belt

A new type of conveyor belt, molded with a corrugated surface that will raise light goods in cartons or heavy materials in bags up inclines of 30 to 40 degrees, has been announced by P. F. Madsen, sales manager of the belting division, Russell Manufacturing Company, Middletown, Conn.

The new belt, called "Ruff-Ridge," consists of a solid woven carcass, thoroughly impregnated with a neoprene solvent cement for moisture resistance. This carcass is then coated on the upper side with a layer of a neoprene-natural rubber blend ⅛ in. thick. Cured against a special mold of novel design, the top surface of the belt is given its corrugations, approximately $\frac{3}{32}$ in. deep on $\frac{5}{16}$-in. centers.

The result is a belt with the chemical and moisture resistance of neoprene and with the high physical properties of natural rubber. Its abrasion resistance is claimed to be comparable to that of a good quality tire tread.

The individual corrugations are designed in shape and strength for maximum traction and will convey bagged materials up inclines as steep as 40 degrees and lighter, packaged goods up 30-degree inclines. Flexing the belt around the pulleys generally prevents the accumulation of dirt, but the corrugations may be easily brushed out if necessary.

LIMA 802 DIGS 90,000 YARDS OF ROCK--

without one dollar for repairs!

Bradford Weston and Brad, Jr. standing beside their LIMA shovel.

"No other shovel will outperform our LIMA," says Bradford Weston of Hingham, Mass. "Our 2-yard LIMA Shovel has dug about 90,000 yards of rock in our quarry during the past year, *and we haven't spent a dollar for repairs.* We call that tops in performance."

Records like this are causing more and more shovel and crane users to switch to LIMA. From crawler to shovel dipper, crane clamshell, or dragline bucket — every LIMA is engineered and built to *stay on the job.* It will pay you to investigate the many exclusive LIMA features that make these records possible.

The LIMA line includes Shovels ¾ to 6 yards, Cranes 13 to 110 tons, and Draglines variable.

It will pay you to consult your nearest Lima Sales Office or representative before you buy your next shovel, crane or dragline. Offices in principal U.S. cities.

Lima Shovel and Crane Division
LIMA, OHIO

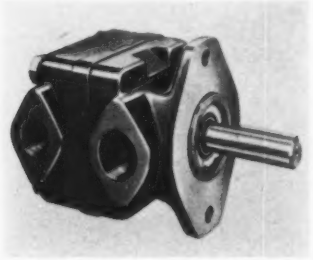
LIMA HAMILTON CORPORATION

OTHER DIVISIONS: Lima Locomotive Works Division, Niles Tool Works Co., Hamoon, Owens, Rentschler Co.

● Hydraulic Pump

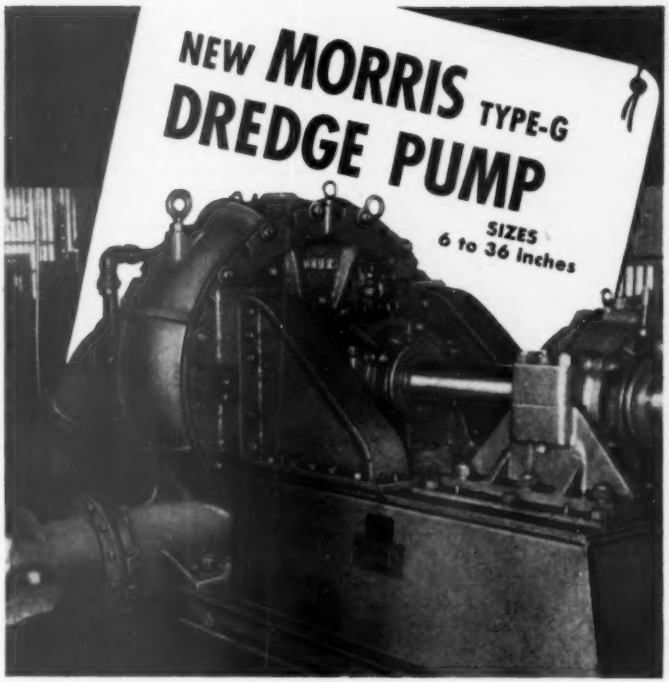
A new Series V-200 balanced vane pump expressly designed for the specialized requirements of the mobile equipment industry, is announced by Vickers Incorporated, 1598 Oakman Boulevard, Detroit, Mich.

A major feature cited for this new pump is longer life at maximum efficiency far in excess of fixed clearance pumps, as the V-200 is said to be the only pump designed automatically to maintain correct radial and axial clearances at all times. Normal wear is compensated, and the pump automatically adjusts its clearances to oil viscosity variations resulting from temperature change. As a result, correct clearances are maintained and more oil is delivered for useful work.



The Vickers feature of "hydraulic balance" eliminates bearing loads resulting from pressure. The "vane" principle provides for no-load starting—important in cold weather cranking. Greater mounting adaptability is another feature. The V-200 pump is made in four capacities for operating pressures up to 1000 p.s.i.

A 66 percent reduction in drilling time and a 50 percent cut in man-hours on a series of routine drilling jobs in the gypsum mine of the Grand Rapids Plaster Company of Grand Rapids, Mich., has been effected through the use of Carboloy masonry drills—tools commonly used in building construction and maintenance work. Operation consists of drilling 8-in. deep holes at regular intervals through gypsum and the overlying rock in the roof for use in electric wiring work. One man using an Ingersoll Rand 8U—fitted with a 1½-in. Carboloy masonry drill—sinks each hole in about 10 minutes as against 30 minutes for two men using a hammer and conventional star drill. The tip on the drill is made of Carboloy cemented tungsten carbide.



Your ticket to a

LONG RUN PERFORMANCE

with Minimum Power Consumption

What do we all want most in a dredge or materials handling pump? There is only one answer — *the lowest possible overall cost per yard or ton.* You've got it in the new Morris Type G. Intervals of down-time are few — because Type G is simple, rugged, fool-proof. Power consumption is cut to the bone, over a large range of capacities — through long or short pipe lines — against high heads or low. You'll be amazed at the performance of this new Morris Dredge Pump — but take a look at these design and construction features and you'll know why this "work horse" is being called "the most efficient dredge pump ever built."

1. Runs maximum length of time under high, sustained output—without replacements. That means LESS DOWN-TIME.
2. Designed with fewest possible wearing parts—and these have longer life. That means LESS DOWN-TIME.
3. No complicated seals or sealing rings—less vulnerable points. That means LESS DOWN-TIME.
4. Unusually easy to dismantle, and reassemble. That means LESS DOWN-TIME.
5. Has Morris exclusive balanced impeller—less thrust—longer bearing life. That means LESS DOWN-TIME.

Just Issued — Write today for detailed literature about this New Morris Type G Dredge Pump

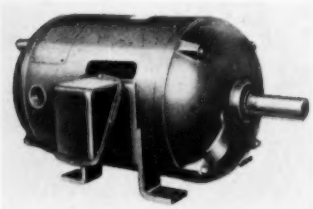
MORRIS MACHINE WORKS
Baldwinsville, N. Y.

MORRIS *Centrifugal Pumps*

Branch Offices in Principal Cities

● Wound-Rotor Motor

The Crocker-Wheeler Electric Mfg. Co., Division of Joshua Hendy Corp., Ampere, N. J., announces its new Form BW protected-type wound-rotor motor, built in NEMA frames 224-505 in ratings up to 100 hp., and in larger frames up to 2000 hp.



Frames and end shields are drip-proof. In addition to the standard drip-proof enclosure, these motors are available splash-proof, and totally-enclosed non-ventilated. Other mechanical modifications include NEMA floor-, sidewall-, and ceiling-mounting assemblies, and NEMA C face and D flange mountings. Both C face and D flange motors are available for horizontal or vertical operation, with or without feet.

Crocker-Wheeler protected-type wound-rotor motors are designed for applications requiring smooth acceleration, high starting torque with low starting current, ability to start and stop or reverse frequently, or variable speed. They are suitable for driving conveyors, crushers, fans, centrifugal compressors, etc. Special windings are available for crane and hoist service.

Replace Obsolete Equipment ***NOW!*** *with*

MINNEAPOLIS MOLINE MM MODERN MACHINERY

INDUSTRIAL WHEELERS*

★ Modern pit methods call for *Easy Handling MM Industrial Wheelers.* The new 27 and 49 h. p. heavy duty models are large capacity . . . can go anywhere . . . speeds up to 14.5 m.p.h. Operators save time with quality MM Industrial Wheelers . . . *built for dependability, ruggedness and easy maneuverability.*

A wide variety of attachments enable owners of MM Industrial Wheelers to do the work where larger and less maneuverable machines fail . . . *and do it at lower cost.*

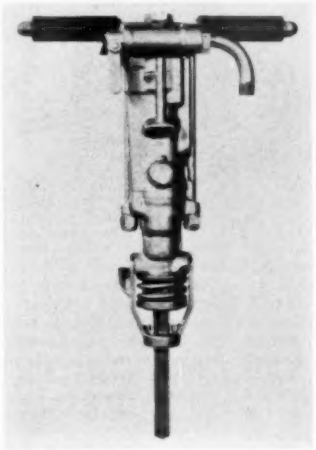
MM Industrial Power Units for crushers, conveyors, pumps and screens are available from 25 to 230 h. p.

See Your MM Dealer-Distributor or Write

MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA

● 45-Lb. Class Sinker Drill

A new 45-lb. class sinker of advanced design has just been announced by Gardner-Denver Company, Quincy, Ill. Known as the S48, this new sinker is said to have superior drilling, rotating and hole cleaning characteristics that make it especially suitable for use with modern tungsten carbide rock bits. Performance tests show that the S48 sinker equals most 55-lb. drills in speed and rotative power, according to reports from the manufacturer.



Designed for either wet or dry drilling, the S48 can be changed from wet to dry or to automatic air-operated water control merely by changing the gland and tube. The conversion is made without taking the drill apart, and without changing the backhead.

An improved steel puller on the S48 has no nuts to work loose; it can be swung clear of the chuck when desired. A new type of water connection swivels freely, yet is said to have a leak-proof water seal. The air cleaning screen is designed to clean itself during blowing.

New Lightweight—Trowlite—Featured by California Firm

Walter Industries, Inc., of South San Francisco, Calif., is producing a new material called Trowlite, a derivative of perlite.

According to Ralph C. Walter, president of the firm, Trowlite is made by expanding the volcanic ore 11 or 12 times its original size. The lightweight material is featured as an insulating and sound-proofing agent, and other products manufactured from it will be announced in the near future.

While the plant is at present operating on a one-shift basis, facilities are arranged for a later conversion to three shifts daily.

More Information, Please!

CHECK AND MAIL THE CARD BELOW FOR ADDITIONAL INFORMATION ON NEW MACHINERY AND SUPPLIES

1. Link-Belt Gearmotors. Catalog No. 1815A. Illustrations and descriptions of Link-Belt double and triple reduction units, with tables of dimensions and diagrams, compose a simplified catalog. A single selection table replaces the previous three selection tables for Gearmotor size. Link-Belt Co.

2. Denver Portable Crushing Units. Flier (Bulletin No. C12-B-8) on a four-wheeled portable crusher, presenting outstanding features, a table of specifications, and other important information. Denver Equipment Co.

3. Unit-Cooled D.-C. Motors. Bulletin GEA-4469A. A complete description of these units designed for use in dusty, dirty, oil-laden atmospheres. Illustrations, including a cut-away view, show single- and double-blower types. Apparatus Dept., General Electric Co.

4. The Dorr Type H. Classifier. Bulletin No. 2251. Illustrated with photographs and sketches. Covers component parts, mechanical action, hydraulic lifting mechanism, lubrication system, types and sizes, and advantages of this new classifier. The Dorr Co.

5. Rex Pump Specification Sheets. These give complete information and contain many illustrations. Specification Sheet 49-10 MLP for 2-in. models and 49-20MLP for 3-in. models. Chain Belt Co.

6. Bulletin No. W1816. Describes the Bristol Electronic Pyrotrol in its applications with gas-fired ovens, furnaces, kilns, boilers, dryers, kettles and similar equipment, offering protection from gas explosions during ignition, operation and and shut-off. The Bristol Co.

7. The Inside Story of Allis-Chalmers "Safety-Circle" Motor Protection. Bulletin 51B6210B. Describes design and construction features of the device. A large cut-away view, keyed for easy identification, shows vital working parts. Allis-Chalmers Mfg. Co.

8. Barrett Safety Ramp. Bulletin 4971. 4-page folder presenting the applications and characteristics of this ramp. Actual on-the-job views, diagrams, sketches and closeups are included, as well as a table of specifications. Barrett-Cravens Co.

9. Simplified Preventive Maintenance Control. A 6-page report on "preventive maintenance of machines and equipment and the record control system needed to administer such a program effectively." Tells how preventive maintenance records may be combined with property records to insure keeping right amount of equipment on hand and in good condition. Contains a section on inventory systems to control stocks of replacement parts and operating supplies. Systems Division, Remington Rand, Inc.

10. Bulletin P1150. Presents functions and features of the Little King Bench Scale line. Photographs, engineering drawings and tables supplement the text to give the full story of 18 different Little King scales. Yale & Towne Mfg. Co.

11. Sika Better Concrete Structures at Low Cost (Bulletin PP-2) and Sika Hot Weather Concrete. A presentation of Plastiment, a "concrete densifier" and its advantages. Sika Chemical Corporation.

12. Rust-Oleum. 16-page bulletin containing color swatches and descriptions under the following headings: long oil type coatings; short oil type coatings; heat resistant coatings; chemical resistant coatings; machinery and implement finishes; floor coatings; liquid sealers; Rust-Oleum oils; Rust-Oleum distributors; protective coating R-9; and standard containers. Rust-Oleum Corp.

13. Bulletin on Mullitex and Mullitex RB. Presents the properties, typical applications and important data on this super-duty fire brick and refractory in the form of a convenient reference table. Walsh Refractories Corp.

14. Eriez Permanent Magnets and Metal Detectors for Mining Applications. 4-page bulletin containing illustrations, drawings and detailed explanations on the use of magnets and detectors in nonmetallic and other mines. Also presents cost-saving features and pertinent installation suggestions. Eriez Mfg. Co.

15. Minneapolis-Honeywell Mercury Switches. Catalog 1343. Two basic types of Honeywell switches are described and illustrated—mercury-to-electrode and mercury-to-mercury. Engineering data and selections are also included, as well as complete switch specifications charts. Minneapolis-Honeywell Regulator Co., Brown Instruments Div.

16. DeLaval Opposed Impeller Pump. Catalog 1550. Contains a complete description of two- and four-stage DeLaval opposed impeller pumps. Rating and dimension tables are also given. DeLaval Steam Turbine Co.

17. Technical Bulletin No. 1—Wire Rope Sockets. 8-page bulletin containing specification tables for open-wire and closed-wire rope sockets. The Wire Rope Institute.

18. Cutting Quarry Costs. Form 12250. Presents "Caterpillar" product application and performance in moving rock aggregate, sand, volcanic ash, agricultural limestone, etc. Caterpillar Tractor Co.

19. Catalog on Joy Wagon Drills. 12-page booklet covering three sizes of wagon drills—light, medium and heavy. A series of line drawings show how drilling costs are reduced. Photographs show actual field applications. Joy Mfg. Co.

20. Everything It Takes for Heaviest Hauling. Wall chart of 11 basic models, from 35,000 G.V.W. to more than 90,000 G.C.W. (gas and diesel). G.M.C. Truck and Coach Div., General Motors Corp.

21. Darex AEA Dispenser and Air Meters. Illustrated with photographs and line drawings, this booklet describes several types of dispensers and meters. Gives essential information on installation and operation. Dewey and Almy Chemical Co.

22. Telsmith Equipment for Mines, Quarries, Gravel Pits. Bulletin No. 266P. Covers the following: gyratory breaker, jaw crusher, gyrasphere crusher, intercone

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crusher, roll crusher, Pulvator, Vibro-King, standard screens, rotary grizzlies, rotary screens, super-scrubbers, screw washers, sand classifiers, sand tanks, sand drags, plate feeders (standard and heavy-duty), apron feeders, belt elevators, chain elevators, belt conveyors, bin gates and portable crushing plants. Specifications are included for most of these units. Included also are a quarry plant questionnaire and a gravel plant questionnaire. Smith Engineering Works.

23. Pennsylvania Impactors. Bulletin 6015. 4-page folder including explanatory text on the following subjects: the "impact principle"; granular particles through impact reduction; high reduction ratios —typical uses; "cleavage breaks" and ore concentrations; closed-circuit operation, speeds; general construction; engineering study; and other pertinent material. Pennsylvania Crusher Co.

24. For Complete, Packaged Power! Bulletin 112. Describes a line of complete packaged power in the form of diesel and gasoline engine-driven generator sets, ranging from 5 to 250 kw. International Diesel Electric Co.

25. American Blower. Bulletin No. B-4729. 48-page booklet presenting the comprehensive and complete line of equipment for air handling and smooth transmission of power through Gyrol fluid drive. American Blower Corp.

26. Cutler-Hammer Merchandising Catalog, 1949-1950. Illustrates and describes a line of safety switches, service control and multi-breakers, motor control and electrical specialties. Cutler-Hammer, Inc.

27. Robins Woven Wire Screen Cloth. Bulletin No. 113-A. Contains tables of sizes, recommendations for selecting correct sizes, etc. Describes the new enamel-coated screen cloth. Robins Conveyors Division, Hewitt-Robins Inc.

28. Fuller—A Complete Line of Heavy-Duty Transmissions. A catalog of Fuller heavy-duty, unit-mounted auxiliary and amidship-mounted transmissions. Each model is illustrated and fully described. Gear ratios given for each. A specification sheet is attached. Fuller Mfg. Co.

29. Scoot-Crete. 4-page bulletin presenting a mechanized wheelbarrow for heavy-duty concrete jobs. Actual on-the-job photographs show the many applications for the Scoot-Crete, which can be supplied with optional equipment including a flat bed, snow plow, scraper blade or platform lift. Specifications are included. Getman Bros., Mfg. Division.

30. The Original Self-Dumping Hopper. Illustrated folder describing the Roura self-dumping hopper. Includes details of construction and engineering data. Roura Iron Works, Inc.

31. Knickerbocker 28-S. This bulletin describing the Knickerbocker 28-S mixing plant is illustrated with keyed views of the device which show all vital features and parts. Specifications for mixing drum, trunnion rollers, discharge chute, power loading skip and countershaft and transmission are given. The Knickerbocker Co.

32. Properly Engineered Storage Increases Overall Plant Efficiency. Describes and pictures Rotabins—rotating bins—and steel shelving for economical storage. The Erick-Gallagher Mfg. Co.

33. The Feedoweight Will Tell You. Bulletin 45AC. Describes and explains the operation of the Feedoweight and the Weightometer, weighing and conveying devices. Text is supplemented by illustrations, sketches, drawings and tables of dimensions and capacities. Merrick Scale Mfg. Co.

34. Nagle Industrial Pumps. Catalog 4906. Gives complete coverage of Nagle's line of industrial pumps for abusive applications and priming indicators. Also contains facts on installation and design of pumps. Nagle Pumps.

35. Beaver Hoisting Towers. Illustrations of details and a sketch of a typical Beaver tower, built of tubular steel, are accompanied by descriptive notes. Beaver Art Metal Corp., manufacturers; Dravo Corp., distributors.

36. Worthington Paving Breakers and Sheeting Drivers. Bulletin H-1200-B40. Six-page bulletin which pictures and describes six models of breakers and one sheeting driver attachment. Specifications for breakers and drivers are given. Photographs of job-site applications illustrate various uses for these devices. Worthington Pump and Machinery Corp., Construction Equipment Sales Division.

37. Universal Reinforced Concrete Pipe Lines. Flier presenting Universal clay-lined, acid-resistant concrete pipe. Universal Concrete Pipe Co.

38. Catalog No. 40-S. 24 pages. Contains informative engineering data and prices on single and double worm gear reducers. Type S or single reduction comes in 24 sizes, in ratio ranges of 5.66 : 1 to 100 : 1 and from .04 to 14 hp. Double worm gear reducers are available in ten sizes with ratio ranges of 87 : 1 to 10,000 : 1 and from 106 inch-pounds to 3480 inch-pounds output torque. Stock sizes, available for immediate shipment, are plainly indicated. D. O. James Gear Mfg. Co.

39. Lessmann New 1950 Power Shovel. 4-page folder featuring the new model of this unit. Sketches and cartoon-type illustrations show its advantages. "Built-in" features are listed and explained. Specifications included. Lessmann Mfg. Co.

40. Amsco Welding Products—Selector and Comparison Chart. Bulletin CC-3. Lists each of Amsco's welding rods and electrodes and indicates the type of service for which each is designed. American Manganese Steel Division, American Brake Shoe Co.

41. P & H Diesel Power. 4-page illustrated folder presenting special features of P & H diesel engines. Contains inserts listing specifications of the Model 687-C (two-cycle), Model 387-C (two-cycle), and Model 287-C (two-cycle, two-cylinder). Included also are mounting dimensions for each model and graphs of torque, horsepower and fuel consumption. Harnischfeger Corp., Diesel Engine Division.

42. The New Mobile Drill, a flier featuring a new 2-way (horizontal and vertical) drill and describing its outstanding characteristics; and **A New Multi-Use Drill for Only $995,** which shows photographs of the device in action, specifications, a sample drilling log, etc. Mobile Drilling, Inc.

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● Crane and Carrier

The upper deck and roller path of the Byers Model 83 is combined with an equally rugged crane carrier chassis to provide a heavy-duty, highly mobile 20-ton crane and ¾-cu. yd. excavator known as the Model 83-CC.

Because the unit is convertible to all

boom attachments, it is extremely versatile. Four sliding outriggers increase the stability of the Model 83-CC. When fully extended, these outriggers provide a base 14 ft. 6 in. by 13 ft. 9½ in. to relieve the eight rear tires of overloading. The crane boom is hinged to fold for highway travel.

Four widely-spaced hook-type rollers on the underside of the main revolving frame ride in a large-diameter rolling path to provide a unit for absorbing the upward and downward strains imposed by the upper deck and boom loads.

Three different crane boom attachments are offered with the Byers Model 83-CC—one for standard operation, a second for extra-high lifts, and a third for extra-heavy crane lifts. The Byers Machine Company, Ravenna, O.

Nylon-Cotton Combination Favored in Belt Construction

Nylon in combination with cotton is fast becoming the favored material for the construction of heavy-duty conveyor belts used in installations where belts must withstand severe service.

It is gaining favor primarily because of important savings in operating and maintenance costs which result from its use, Ernest G. Brown, vice-president and general manager of the mechanical goods division, United States Rubber Company, said recently.

The versatile plastic is used as a crosswise fiber in convevor belt fabric, Mr. Brown pointed out. Cotton yarn is the best textile for the longitudinal fiber in belt construction found to date, he said.

Use of nylon in combination with cotton yarns makes possible a greater number of fabric plies which increases the overall belt strength by as much as 250 percent. At the same time, nylon gives a thick belt far greater flexibility.

It Pays To Do These Jobs The NAYLOR Lightweight Way

You get the advantages of lightweight lines when you use Naylor Pipe. Its distinctive Lockseam Spiralweld structure produces pipe that is light in weight yet provides the strength and safety required in mining service. Add to this performance the speed and economy of Naylor Wedge-Lock Couplings and you have a combination not found in ordinary lightweight pipe.

Sizes from 4 to 30 inches in diameter—thicknesses from 14 to 8 gauge. All types of fittings, connections and fabrications.

Write for Catalog No. 44.

Specify NAYLOR PIPE for These Applications

AIR LINES—high or low pressure
WATER LINES—high or low pressure
HYDRAULICKING
DRAINAGE
SUCTION LINES
SLUDGE LINES
VENTILATING LINES

Naylor Pipe

NAYLOR PIPE COMPANY
1257 East 92nd Street, Chicago 19, Illinois
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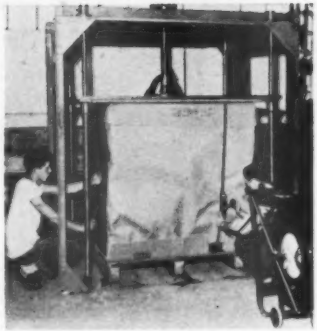
● Bag Handling Device



Less costly and safer handling of large numbers of empty kraft paper bags during transit from bag plants to customers' warehouses has been developed in the new St. Regis "Unit Load." Designed by the Multiwall Bag Division of St. Regis Paper Company, this device offers many advantages over customary palletized loads in the shipment of large multiwell paper bags.

The Unit Load is the systematic arrangement of 1,000 to 2,000 multiwall bags (depending on size and construction) into one unit. Built into the Unit at the bottom are two parallel, expendable paperboard slots (either rectangular or circular) into which the forks of any standard lift truck are inserted for easy movement of the Unit. Distance between the slots is variable. The Unit is subjected to pressure to compress the bags into a solid, flat and compact bundle, and then is wrapped in protective kraft paper and steel banded.

It is reported the Unit Load offers a considerable saving in time and labor costs in emptying carloads of bags, greater ease in storing bags prior to delivery to automatic packers that ultimately fill the bags with industrial or agricultural products, less damage to bags in transit due to added protection afforded by the heavy wrapping paper, quicker inventory of bag stocks on hand, and overall better appearance of stacked bags in warehouses.

● Tire Remover

A hydraulic tire remover which should prove a great time and labor saver in changing large earthmover tires has been perfected by Goodyear Tire & Rubber Co. Especially designed to facilitate the breaking loose of these giant tires' beads from the rims, the tool will operate on

any tapered bead rim of Goodyear design, according to the firm's engineers.

Portable and highly compact, the equipment consists of a ram assembly 19 in. long, weighing 25 lbs., together with a pump and hose which provide hydraulic pressure for operating the latter two pieces. These work on both front and back of the rim, making it possible to loosen damaged tires from the rim so as to effect quick changes on the job.

Leonard J. Doyle, vice-president in charge of sales for Union Bag & Paper Corporation, announces the opening of a new Multiwall Bag Sales office in New Orleans, La. Herman R. Ninesling, formerly of the New York Multiwall Sales office, will represent the company in Louisiana and Arkansas and will have headquarters in the New Orleans office.

The appointment of T. Max Stanger to the sales staff of American Wheelabrator and Equipment Corp., Mishawaka, Ind., was recently announced. Mr. Stanger will have his headquarters in Salt Lake City, where the company has not previously had a sales office.

A PIONEER
of Small Excavating Equipment
...AND STILL A LEADER!

GENERAL SHOVELS, DRAGLINES, CRANES, ETC.
Diesel, Gas, and Electric Powered . . . Wheel and Crawler Mounted. ½ and ¾ Cu. Yds.

Generals have always been known for speed . . . for strength and power . . . for flexibility . . . for the ability to take punishment day after day and still give uninterrupted performance. Constant improvement of the product through new engineering developments, has added to that reputation.

A typical General achievement is the self-propelled one-man, one-engine crane, on rubber. Similarly, the new General crawler-mounted shovels, cranes and draglines, etc., are making an enviable record of out-performing all other types of equipment of comparable rating. Write today for the latest details.

POWER SHOVELS • CRANES • DRAGLINES • CLAMSHELLS • BACKHOES • PILE DRIVERS
THE OSGOOD CO. OG THE GENERAL CO. EXCAVATOR
MARION OHIO
DIESEL, GASOLINE OR ELECTRIC POWERED • ⅜ TO 2½ CU. YD. • CRAWLERS & MOBILCRANES

Final Annual 1948 Totals For U.S. Cement Production

Production—The demand for hydraulic cements in 1948 was so great that production attained a new record. The production of 205,448,263 barrels of portland cement was reported to the U. S. Bureau of Mines—an increase of 10 percent over 1947 totals. The production of other hydraulic cements (natural, masonry, and puzzolan) by nine plants amounted to 3,440,248 barrels, an increase of 17 percent over the previous year.

Shipments—The demand for portland cement in 1948, as indicated by shipments from mills, rose to 204,304,662 barrels, valued at $445,678,073, as compared with 187,491,869 barrels and a valuation of $356,213,976 in 1947. The average value of $2.18 per barrel in 1948, compared with $1.90 in 1947, reflects the continued rise in labor and other manufacturing costs. Shipments of "other" hydraulic cements increased 15 percent—to 3,375,135 barrels in 1948.

Stocks—Mill stocks of portland cement on hand December 31, 1948, amounted to 11,155,208 barrels—11 percent more than at the end of 1947. A decline in stocks in 1948 was recorded in seven districts (including Puerto Rico), while 12 districts reported increases. Final stock figures of natural, masonry, and puzzolan cements on hand at the close of 1948 amounted to 210,521 barrels—an increase of 45 percent over the 1947 totals.

Capacity—The estimated annual capacity of the portland cement industry in 1948 was 254,272,378 barrels, as compared with 249,107,218 barrels in 1947. The percent of capacity utilized in 1948 was 80.8 (74.9 percent in 1947)—an increase of 2 percent over that reported for the preceding year. With 2 exceptions, the percentage of capacity utilized gained in all districts.

Fuel—With the exception of by-product gas, all fuels showed increases in consumption over the 1947 figures. The percentage changes were: Coal, increase of 7.8; fuel oil, increase of 0.7; natural gas, increase of 16.0; by-product gas, decrease of 56.2. Coal constituted 54 percent of all fuel consumed in the cement industry.

Types of Cement—With the exception of high-early-strength cement, the output of all types increased in 1948 over that reported in the previous year. The quantity of air-entrained cement produced and shipped showed substantial gains over the previous year. Increases in sales of sulphate-resisting and white cements are noteworthy.

Shipments by Types of Carriers—Portland cement in 1948 was transported largely by railroad (81 percent), followed by truck (17 percent). Shipments by boat accounted for the balance.

Hydraulic Cements Other Than Portland—The production of natural, masonry, and puzzolan cements in 1948 amounted to 3,440,248 barrels, an increase of 17 percent over that recorded in 1947. Shipments and stocks on hand at the end of 1948 were also above the previous year's totals.

New Limestone Sources Found In Southwestern Iowa

Southwestern Iowa is becoming an important new source of limestone, road rock and gravel, specifically Montgomery County. Three concerns are operating in this area, where farm land is sometimes stripped to a depth of 50 feet to reach the stone.

One quarry near the Red Oak airport is being worked day and night. At another farm-site a quarry has been developed which is thought to contain 100,000 tons of limestone.

Matthew J. Delehaunty has been named district sales manager for the Pittsburgh, Pa., branch of the mechanical goods division, United States Rubber Company. Mr. Delehaunty now directs all Pittsburgh branch sales of hose, conveyor belts, packing and the other industrial rubber products manufactured by the company's mechanical goods division. He succeeds J. W. Greenwalt, who has retired from the company.

John A. Roebling's Sons Company, Trenton, N. J., nationally-known manufacturers of wire products, announces the opening of its new Denver, Colo., office and warehouse on September 30.

Homer H. Davis is manager and Roy H. Hainsworth is his assistant.

DON'T WASTE MANPOWER!
-hammering and poking arched and plugged bins, hoppers, bunkers and chutes!

APPLY
SYNTRON
"Pulsating Magnet"
ELECTRIC VIBRATORS

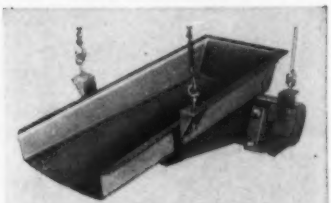
3600 powerful vibrations per minute break down arching and plugging—eliminate man hour and production losses.

They can be applied to any size and shape of bin, hopper and chute — whether made of steel, wood or concrete.

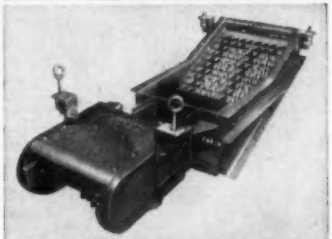
Catalog data is available — or write, giving the details of your problem.

SYNTRON CO.
385 Lexington, Homer City, Pa.

OTHER SYNTRON EQUIPMENT

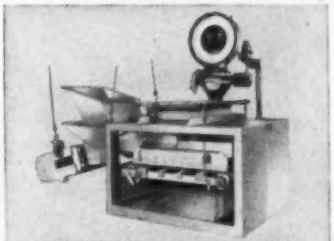


VIBRATORY FEEDERS
Up to Hundreds of Tons per Hour — Rheostat Control of Flow



VIBRATING SCREENS
Wet or Dry — Single or Multiple Decks

VIBRATING GRIZZLIES
Both Feed and Scalp With One Unit



"CONSTANT WEIGH" FEEDERS
Accurate, Continuous Feed by Weight

trade notes

The 50th anniversary of Charles E. Wilson, president of the General Electric Company, as an employee of the firm was marked by a company publication, *Charles Edward Wilson—American Industrialist*, prepared by Kent Sagendorph. The 50-page booklet tells the story of the three-dollar-a-week office boy who joined the Sprague Electric Company in 1899 and stayed with the firm after it was absorbed by General until he became president.

A. J. Rinnander, formerly with the Chicago Pneumatic Tool Company, New York, has become a member of Harnischfeger Corporation, Milwaukee. He will supervise field activities, Zip-Lift hoist distributors, and sales on a national basis under the direction of E. W. Potratz, manager Hoist & Trav-Lift Crane Division, Milwaukee.

Frank J. Hasselman has been appointed division manager for the St. Paul Division of Gar Wood Industries, Inc., makers of the St. Paul line of dump-truck bodies, hoists and truck patrols at Minneapolis, Minn.

Mr. Hasselman succeeds W. L. Larson, who has become division manager for the Gar Wood Wayne Division.

John J. Summersby has been elected vice-president in charge of sales by the directors of Worthington Pump and Machinery Corporation. Thomas J. Kehane was made assistant vice-president and general sales manager.

Mr. Summersby joined the Cincinnati Works of Worthington Pump and

J. J. Summersby

T. J. Kehane

Machinery Corporation in 1916 as a student engineer. In 1919 he was assigned to the St. Paul district office as a salesman and later was made district sales manager. He was manager, Holyoke Works Sales, from 1929 to 1931; assistant general sales manager from 1931 to 1934; and since then, assistant vice-president and general sales manager.

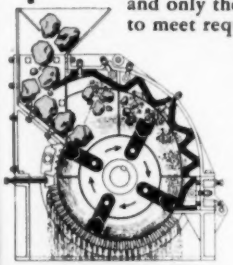
Mr. Kehane joined Worthington in 1915. Since then he has advanced through various positions in the sales department, and in 1944 was appointed commercial vice-president, Pacific Coast. For the last two years he has served as Pacific Coast regional vice-president of the Navy Industrial Association.

James M. Hughes has been appointed sales promotion manager of the Republic Rubber Division, Lee Rubber and Tire Corporation. Mr. Hughes was formerly assistant sales manager of the Pennsylvania Rubber Division of the General Tire & Rubber Company.

The Pennsylvania Crusher Company, Division of Bath Iron Works, announces the promotion of Woodrow W. West to chief sales engineer. He will be located at the main offices of the Crusher Division, Philadelphia, Pa. Mr. West started his Crusher Company career at the beginning of 1942. He worked successively in engineering, testing, shop inspection and sales.

There is no GOOD substitute for Staged Rock Reduction . . .

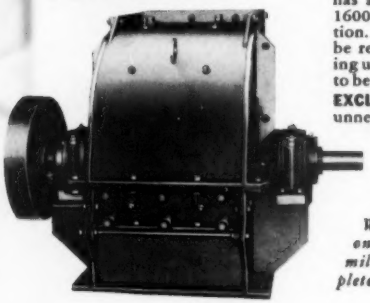
● Like flour, gasoline, refining of metals and many other industrial products, reduction of rock requires staging of co-ordinated, balanced equipment. Then, and only then can the finished product be controlled to meet required specifications.



You Can Rely on a ROGERS Low Power — High Speed HAMMERMILL

With a breaker plate designed for the 90° impact principle, the Rogers Hammermill has a "double shattering" effect. Turns at 1600 R.P.M. for agricultural lime production. For crushing Road Rock, speed may be reduced to 600 to 800 R. P. M. depending upon nature of the rock, size to which it is to be crushed and desired rate of production.

EXCLUSIVE . . . In some types of crushing it is unnecessary to use the grate in a Rogers Mill. Particularly in production of agricultural lime, and if a screen is in the circuit, the grate need not be used.



Write for this folder on Rogers Hammermills for more complete information.

ROGERS IRON WORKS CO.

JOPLIN, MISSOURI

R. H. Bacon has been elected president of the Chicago Technical Societies Council for 1949-50. He is vice-president of the Industrial Advertising Agency of Kreicker & Meloan, Inc. and president of R. H. Bacon & Co., business paper editorial service.

The Chicago Technical Societies Council is made up of some 50 scientific, engineering and technological societies representing approximately 18,000 members.

John G. Caley has been appointed district manager of the Mack Truck Company's Birmingham (Ala.) direct factory branch. In assuming his new duties, Mr. Caley relinquishes those of manager of the National Accounts Department for Mack's Southern Division.

E. R. Traxler has been named manager of the new flat belting field engineering and development department of the B. F. Goodrich Company's industrial products division.

Chain Belt Company of Milwaukee, manufacturers of Sprocket Chains and Power Transmission Machinery, Conveyors and Process Equipment, announces the appointment of Douglas Jones as manager of the Salt Lake City District Office. He will operate his business as the Douglas Jones Company at 1551 Redondo Avenue, Salt Lake City, Utah.

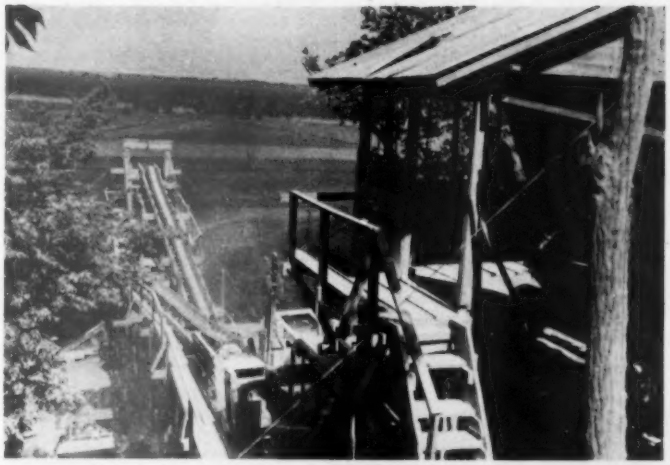
Watson P. Hall recently joined the Toronto, Ontario, sales office staff of American Wheelabrator & Equipment Corp. For the last three years Mr. Hall has been a member of the service engineering staff of this organization.

J. W. Morgan has been advanced to the position of assistant sales manager of the Hyster Company's Eastern sales division. He will be in charge of tractor equipment sales activities and will be located at the Hyster plant at Peoria, Ill.

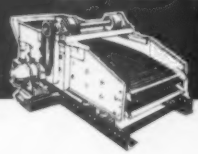
The Jeffrey Manufacturing Company, Columbus, O., announces the following changes in personnel at the home office and in its district offices:

Russell W. Knode, 13 years with the company and in the Export Division for three, has been made assistant manager of that division; Clark Allen is replacing E. F. Abram (retired) as head of the pricing department; F. E. McGovern, formerly of Coal Preparation Engineering, is being transferred to coal preparation sales, Henry W. Nau replacing Mr. McGovern in the Engineering Division.

H. C. Rockwell, district manager of the Baltimore office, is returning to the Product Sales Division at the home office; J. R. Brisley, who has been working out of the Philadelphia district office, takes over as district manager at Baltimore; Charles E. Lawall Jr., a member of the home office Student Training Division, has been assigned to the Philadelphia office where R. W. Sweitzer is district manager.



They do it with a
DEISTER...
for trouble free operation
the year around.



A 4' x 12' three-deck Deister Vibrating Screen used by Hayes Quarries, St. Joseph, Mo., handles an average of 90 to 100 tons of crushed rock an hour—grades and sizes 1½" and ¾" concrete rock, ½" asphalt rock and ¼" chips accurately and efficiently.

This quarry operates six days a week on a year-round basis, with the work-day for the Deister Screen ranging from eight to 10 hours. Quarry Manager F. J. Shields says: "I've had experience with all makes of vibrating screens, and the Deister is a good screen. We've had trouble-free operation from our Deister Screen."

Performance and maintenance records established by Deister Vibrating Screens in all types of quarries and gravel plants are proof of their dependable versatility. They run longer with less trouble because of their rugged, all-welded construction . . . grade faster . . . size more accurately. There's a Deister Vibrating Screen for your job. Write for our engineering recommendations and complete information.

DEISTER
SCREENS
DEISTER MACHINE CO.
FORT WAYNE 4, INDIANA

A. Leschen & Sons Rope Company, St. Louis, Mo., announces the election of Arthur A. Leschen as president, and Douglas W. Vernon as vice-president and general manager. Mr. Leschen came to the company in 1902 after having attended Washington University. He is a grandson of Adolph Leschen, who founded the company in 1857, and the brother of Harry J. Leschen, who was president of the company from 1915 to 1942. Since 1943 Mr. Leschen has served as vice-president in charge of production. He succeeds the late William C. Henning, who was president from 1943 until his recent death.

Mr. Vernon became associated with the Leschen Company in 1945 as general manager of sales. In 1947 he was elected vice-president in charge of sales. In addition to his new duties as general manager he will continue to direct the activities of the sales department.

The appointment of D. E. Norquist to the position of manager, grinding media sales, effective August 1, 1949, was recently announced by the Sheffield Steel Corporation, Kanasas City, Mo.

Mr. Norquist has been with Sheffield 15 years, most recently as acting district manager of Sheffield's Denver sales office.

The Osgood Company and The General Excavator Company, of Marion, O., announce the appointment of Earl R. Herb as district sales manager in the states of North and South Dakota, Minnesota, Wisconsin, Michigan, and the northern halves of Indiana and Illinois.

Mr. Herb will make his headquarters at Milwaukee, Wis., and will work closely with the Osgood-General distributors in his territory: Boehck Equipment Co., Milwaukee; The F. D. Lake Machinery Co., Grand Rapids, Mich.; The Telford Equipment Company, Detroit and Lansing Mich.; The Manning Equipment Company, Lansing, Ill.; The Talbert Construction Equipment Company, Lyons, Ill.; The Pecaut Industrial Supply Company, Sioux Falls, S. D.; and Swanston Equipment Co., Fargo N. D.

Worthington Pump and Machinery Corp. officials have announced the appointment of John P. McArthur to the position of manager, West Coast sales, with headquarters in San Francisco. Mr. McArthur will supervise the activities of the Los Angeles, San Francisco, Seattle and Salt Lake City district offices.

James H. Davidson Jr. was recently appointed sales and service engineer for the Clinton Machine Company of Clinton, Mich. At the same time Albert W. Bird was named service manager.

Appointment of the Hines Bearings and Industrial Supply Co., of Billings, Mont., as distributor of Hewitt industrial rubber products in Billings and surrounding territory was recently announced by J. H. Hayden, vice-president in charge of sales, Hewitt-Robins Incorporated, Buffalo, N. Y.

Edward R. Anderson has been appointed vice-president of the Kellogg Division of American Brake Shoe Company, with headquarters at San Francisco. Mr. Anderson joined Brake Shoe in 1930.

William C. Henning, former president of A. Leschen & Sons Rope Company, St. Louis, Mo., died on September 6.

Joseph T. Ryerson & Son, Inc., steel distributors, have announced the following executive changes:

William G. Findlay, former manager of the company's plant in Pittsburgh, Pa., has been transferred to Chicago, Ill., as manager of the Work Order Division.

A. L. Petersen, former manager of the company's plant in St. Louis, Mo., has been transferred to Pittsburgh, Pa., succeeding Mr. Findlay as manager.

John M. Acee, former manager of sales at the Ryerson plant in St. Louis, Mo., has been named manager of that plant, succeeding Mr. Petersen.

Fairbanks, Morse & Co., announce the appointment of Frank M. Mason Jr. as director of engineering. He will continue to be located at the firm's headquarters office, Chicago, Ill. Mr. Mason entered the Research Division in Chicago in 1925 and became successively assistant manager in 1940 and manager in 1946.

BIG TONNAGE on the move! That's what you want. That's what you need. Get it! . . . with a Cincinnati Conveyor Belt. Get their BIG TONNAGE capacity . . . the EXTRA YEARS OF SERVICE . . . their LOWER BELT COST PER TON CONVEYED.

Don't wait. Do it NOW. Get all the facts. Write, wire or phone TODAY!

THE CINCINNATI RUBBER MFG. CO.
CINCINNATI 12, OHIO

CINCINNATI CONVEYOR BELTS

L. B. Smith, Incorporated, Syracuse, N. Y. has been appointed industrial distributor for General Motors Series 71 diesel engines in central and northern New York state. Southern and western boundaries of the new territory assignment are formed by and include the counties of Cayuga, Corland, Broome, Delaware, Green and Columbia.

The Syracuse distributorship is under the direction of T. A. Rose, general manager, and William Wallace, diesel manager.

Paul A. McDonald has been appointed a district manager of the Euclid Road Machinary Co., succeeding J. W. Bloomquist, who became assistant sales manager of Euclid recently. Mr. McDonald will represent Euclid in North and South Dakota, Minnesota, upper Michigan, and parts of Iowa and Wisconsin. The company branch office in Hibbing, which serves the Iron Range, remains in charge of J. R. Blackburn who has been a Euclid district manager since 1937.

Prior to joining the sales development department of Euclid in 1948, Mr. McDonald was project engineer at Clearwater Dam in Missouri for the Mittry Bros. Construction Co., of Los Angeles.

Harold L. Gruehn, formely sales representative in the Allis-Chalmers Milwaukee district office, has been named Midwest region dealer supervisor with headquarters in Chicago. Mr. Gruehn has been associated with Allis-Chalmers since 1941 and since 1945 has been specializing in paper mill industry and franchise products in the Milwaukee district sales office

Denver Equipment Company announces the opening of a new branch office and warehouse at 510 San Francisco Street, El Paso, Tex. In charge of the new office as manager is Robert E. Lintner, who has been associated with DECO for many years as a field engineer.

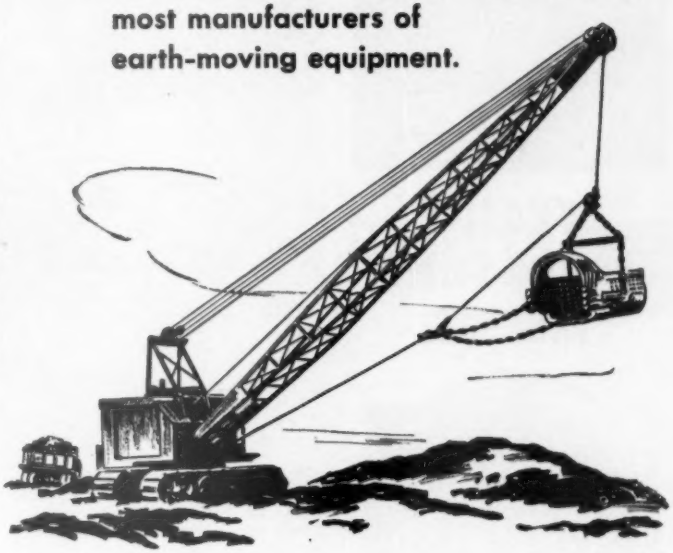
Recent United States Rubber Co. appointments include the following: F. M. Urban, sales manager of engineered rubber products, and H. Leon Moran, factory manager of the Fort Wayne, Ind., plant,

Mr. Urban joined the firm as a salesman in 1929, and since 1946 has been assistant district sales manager at Chicago. Mr. Moran has been with U. S. Rubber since 1922. He has been manager of engineered rubber products at Fort Wayne since 1946.

Roy Johnson, who has been a member of the staff of The Dorr Company since 1936, has been appointed manager of the Central Industrial Division of that company, with headquarters in Chicago. This territory of the Industrial Division was previously handled by H. W. Hitzrot of New York, in addition to his regular duties as manager of the Eastern Industrial Division.

FIRST WITH MANUFACTURERS . . .

J-M INDUSTRIAL FRICTION MATERIALS are specified as original equipment by most manufacturers of earth-moving equipment.



FIRST WITH OPERATORS . . .

Operators who want to keep maintenance costs low *know* that JOHNS-MANVILLE FRICTION MATERIALS are easy to wear in, hard to wear out.

If Johns-Manville materials are right to *start* with . . . they must be right to *stay* with. When you order replacements, remember that Johns-Manville says "stop" and "go" to more tonnage than any other friction materials . . . see your Johns-Manville Friction Materials distributor or write Johns-Manville, Box 290, New York 16, New York.

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INDUSTRIAL FRICTION MATERIALS

No. 1 With Leading Manufacturers

FOR HARD FACING AND REPAIR

Amsco®
WELDING
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TUNGSITE
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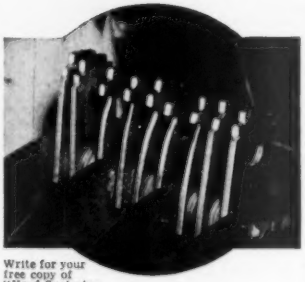

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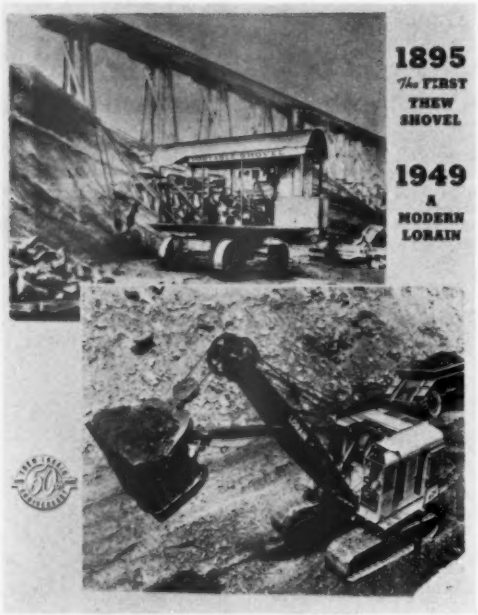
FOUR WEEKS—*instead of only four days*—now that these hammers are tipped with Amsco Tungsite Inserts! Imagine how this 600% longer hammer life, with its reduction in machine repair and down time, has cut the costs of pulverizing asphalt roofing trimmings.

Amsco Tungsten Carbide welding products are available as Inserts . . . or as Tungrod and Tube Tungsite hardfacing rods and electrodes. To meet all job needs . . . Inserts are available in a wide range of shapes and sizes . . . and Tungrod and Tube Tungsite are supplied in a variety of mesh sizes. Recommended for resistance to extreme abrasion, or when a serrated cutting edge is required. Outstandingly successful on rotary drill bits, plowshares, cane knives, muller plows, pug mill knives, hammermill hammers and similar parts.

Brake Shoe
AMERICAN MANGANESE STEEL DIVISION

396 E. 14th St., Chicago Heights, Illinois
Offices in Principal Cities



• A study in contrasts—above, the first Thew "Portable Shovel," built in 1895; below, a 1949 descendant of the venerable original.

Members of The Thew Shovel Co., Lorain, O., celebrated the 50th anniversary of the firm's founding on July 17. Thew's actual history began four years earlier, in 1895, when Captain Richard P. Thew designed and built the first full revolving shovel shown above. Thew, captain of an ore-carrying lake boat, became interested in the 1890's in the difficult problem of handling iron ore after it had been deposited on the docks.

He conceived the idea that a shovel which could dig or load in any position of a 360-degree circle and had a horizontal, crowding motion, would solve many of the ore-handling problems.

It was this idea that led to the development of the first full revolving shovel—a Thew, in 1895. After four years of operation as a personal business, The Thew Automatic Shovel Co. was incorporated in 1899, was later re-incorporated as The Thew Shovel Co.

Today Thew operates five plants, two in Lorain, O., two in Elyria, O., and one in Bucyrus, O. More than 1500 men and women are employed by the firm.

legal decisions

By LEO T. PARKER
Attorney at Law

Recently the higher courts rendered several outstanding decisions, knowledge of which should enable operators of nonmetallic minerals plants to avoid expensive law suits.

Negligence Implied

According to a recent higher court in Pennsylvania, if buildings near blasting operations suddenly crack or are otherwise damaged, the one performing blasting will be held liable, whether or not the property owner proves that blasting effected the damage.

For example, in *Federoff v. Harrison Construction Company*, 66 Atl. (2d) 817, it was shown that a dwelling was 1600 feet from rock blasting operations carried on by the Harrison Construction Company. No material was thrown on the dwelling, but damage resulted from vibration or concussion. The property owner sued for damages.

In allowing damages to the owner of the dwelling, the higher court said: "The jury found that defendant's (Harrison Construction Company's) blasting damaged their dwelling though no material was thrown on plaintiffs' property. . . . There is no doubt that such blasting is an ultrahazardous activity."

Also, see *Mulchanock v. Whitehall Cement Manufacturing Company*, 98 A. 554, L.R.A. 1917A. Here it was held that casting of blasted material on nearby premises resulted in the company doing the blasting being held liable.

Private Road Obligations

Considerable discussion has arisen from time to time over the legal question: When is the owner of a private road liable for injuries to trespassers on the road? The answer is: The owner of the road owes no duty to trespassers, unless the private road is so connected with a public highway as to indicate a *public* use. Under the latter circumstances the owner of the private road must use reasonable care to see that there is no danger to those who are misled into using it.

For example, in *Southern v. Cowan Stone Company*, 221 S. W. (2d) 809, the testimony showed facts, as follows: The Cowan Stone Company is the owner and operator of a ramp for loading lime and stone into railroad cars. The ramp led to a public road. There was no way at night to distinguish the line of demarcation between the public road and the road leading onto the ramp.

One night a pedestrian walked from the public road onto the private road and ramp until without warning, he stepped into space, fell 12 or 15 feet, and landed on the railroad tracks directly under the ramp. He sustained severe injuries and sued the Cowan Stone Company for heavy damages.

Although the lower court refused to award the pedestrian damages, the higher court reversed the verdict, saying: "Defendants (Cowan Stone Company) maintaining a private road between the public road and private ramp in such manner that private road appeared to be public highway, had the duty to exercise reasonable care to maintain the private road and ramp in reasonably sufficient condition for travel by persons misled into using private road and ramp as public highway."

Temporary Danger

Recently, a higher court held that a plant owner can without liability hire minors to work in temporarily dangerous plants, although he violates a state law.

In *Henrie v. Rocky Mountain Corporation*, 202 Pac. (2d) 727, it was shown that a state law prohibits the employment of minors under 18 years of age in a place dangerous to "health, property, or welfare" of minors. In violation to this law a minor was employed to work in a plant. He was injured.

The higher court refused to hold that the employer had violated the law, because the testimony showed that the injury was caused by a temporary dangerous condition. The court said: "Of course, any place of employment, not intrinsically or inherently dangerous, might become, in a sense, temporarily dangerous, as a result of negligence on the part of the employer or one of his servants. But this is not the sort of place in which the legislature intended to prohibit the employment of minors."

Purpose of State Compensation Laws

All courts agree that the purpose of the State Workmen's Compensation Act is to provide injured employees with funds to subsist on until they can return to work. Hence, a majority of courts hold that an employee who earns more money after an injury than before cannot expect payment of compensation.

For example, in *Boulanger v. Liberty Mutual Insurance Company*, 31 So. (2d) 888, it was shown that one Roger injured his arm while attending to his regular work, which necessitated the amputation of the arm. Four months after the accident Roger applied for compensation under the State Workmen's Compensation Act. The employer contested the suit and proved these facts: Before his injury Roger earned approximately $2,500 per year. His earnings since the accident averaged $3,002 per year at the same work.

Since Roger's income was more *after* the accident than before, the higher court refused to award compensation for the loss of his arm. This court said: "In the present case the record abundantly shows, beyond any doubt, that Roger is capable of carrying on substantially and efficiently his duties and is performing his work in a satisfactory manner."

Income Tax Law

An important question is: When may the owner of sand, gravel and rock lands use as a basis for "depletion" the actual value of the land? Assuming that an operator pays $15,000 for a tract of land containing sand and gravel deposits worth $50,000 in his business,

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it is a money-saving tax plan to use $50,000 as a basis for depletion, rather than $15,000.

According to a recent higher court if the operator knew the *actual* value of the land when he purchased it, he must use as a basis of depletion the *cost* price, not actual value.

See *Sidwell, 11 United States Tax Commission 1.* The testimony showed facts, as follows: A man named Sidwell hired an engineer who located a commerical deposit of loam, sand and gravel. Sidwell then paid the owner of the land $5,500 for it, whereas the actual value of the tract was much more.

Sidwell used as a basis for depletion deductions, when filing his income tax return, the actual value of the land instead of the $5,500 purchase price of the tract. The government revenue agent held that Sidwell was several thousand dollars deficient in his income tax liability for a single year. The court held that Sidwell must pay the income tax deficiency, and said: "The record is convincing that prior to his purchase of the tract the petitioner (Sidwell) knew of the existence therein of the type from which he produced. . . . He stated freely that he had bored extensive test holes on the land 10 to 40 feet deep.

Deductible Expenses

Recently in *Warner*, 9 *Tax Commission* 1171, the higher court held as deductible the following expenses: Lawyers' fees examining title to the real property; money paid to real estate experts for inspections of the property; corporation stock issued and money paid for services and state, county and state taxes; cost of fire insurance and other protection; and interest paid on balance due of the purchase price of the property.

The allowance for depletion under Sec. 23 (m) of the statutes is for coal mines 5 percent; metal mines 15 percent; and sulphur mines 23 percent.

See Golden, 7 *B.T.A.* 935. This court held that a gravel pit or deposit is *not* a mine.

Reasonable annual depreciation on machinery for tax purchases is as follows: railspur 5 percent; locomotive 10 percent; steam shovel 20 percent; dredge 20 percent; and electric light plant 10 percent.

Employer Loans Employee

Considerable discussion has arisen from time to time over the legal question: If an employee is loaned to another, who must pay the employee compensation if he is injured? The answer is: The employer who had control of the employee when he was injured.

For example, in *Schiano v. McCarthy, Inc.*, 53 Atl. (2d) 527, it was shown that an employee assisted a truck driver to lift a barrel which weighed between 300 and 400 lbs. The employee sustained severe injuries.

The higher court was asked to decide who must pay compensation to the employee, his employer or the owner of the truck.

The higher court decided that the truck owner was liable because the employee was taking orders from the truck driver when he was injured.

Spur Track

Modern higher courts consistently hold that a company cannot acquire an easement or right to use a spur track belonging to another. Hence you had best purchase the track you now use, or pay its owner for a valid easement to continue using the track.

For example, in *Tift v. Golden*, 51 S. E. (2d) 435, the testimony showed that a corporation has a warehouse for the storage of cement, stone, plaster, etc. This warehouse is served by a switch track which extends from the main railway line to the warehouse. The corporation for many years enjoyed the right of this rail service at its warehouse on this spur track and paid for switching charges, and the like. Recently the owner of the land on which this spur track is located began tearing up the track.

The corporation filed suit and asked the court to grant an injunction to prevent removal of the track because it is the only means of rail ingress and egress to and from its property; it contended that it had an easement to use the track. The higher court held that the property owner could remove the track since in past years it had acquired no easement.

Adverse Possession

You can claim ownership to another's property if you have used it adversely for 21 years, or longer.

In *Grace v. Fuller Company*, 81 N. E. (2d) 401, it was shown that in 1922 the Columbia Company purchased a city lot, and constructed a building thereon. A driveway 10 feet wide was between the Columbia Company's property and the Fuller Company. It was used by both companies. Later the Columbia Company sold its property to one William. Several years later Fuller Company's officials discovered that 9 feet of the driveway was on its property and only 1 foot was on property owned by William. In other words, the driveway was in common use by two owners of adjoining property for over 21 years. The court decided that *both* property owners could use it without interference of the other, although one property owner actually owned 90 percent of the land comprising the driveway.

Must Prove Harmful Quantities

Recently a higher court held that an employee who contracted the occupational disease silicosis, after working for several different employees, cannot recover compensation from the last employer unless he proves that he was subjected to "harmful" quantities of silicon dioxide dust during this latter period of employment.

For example, in *Utah Construction Company v. Berg*, 205 Pac. (2d) 367, it was shown that an employee, during the period 1917 to 1929 was engaged in drilling, blasting and rock mining. Thereafter during the years 1937 to 1939

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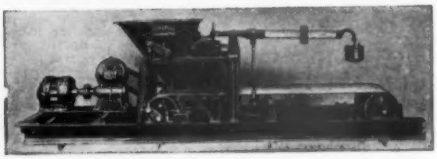

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he worked a total of some 581 shifts, mining rock for another employer. Later the employer shifted to surface road construction work as a powderman, jackhammer operator and laborer. His last employment was with the Utah Construction Company at which time he had "sore throat, hoarseness, weight loss for one year and weakness." X-ray films and later sputum tests enabled the doctor to diagnose the ailment as silicosis and tuberculosis. He became progressively worse and soon was totally disabled, and his employment was terminated. He sued for compensation and proved that he was exposed to silicon dioxide dust for a total period of *not less* than 1200 work shifts for the Utah Construction Company.

The higher court refused to award compensation because he *did not prove* that this exposure was to *harmful* quantities of silicon dioxide dust.

Louisiana Law Differs

Generally speaking, an independent contractor cannot receive compensation from his employer for injuries. However, in Louisiana the law is different because in this state an unusual law exists which provides that where any independent contractor undertakes to execute any work his employer must pay compensation for his injuries.

For example, in *Whitman v. Central Surety & Insurance Corporation*, 41 So. (2d) 116, the testimony showed facts, as follows: A contractor contracted with a state highway department to do highway construction work. This contractor contracted with the owner of trucks to haul gravel at so much per cubic yard. The trucks made several trips per day. The highway contractor exercised no control for direction whatever over the owners of the trucks nor over those who drove same, beyond requiring that the gravel be delivered at designated places. They hauled when they wished and were paid by the cubic yard. A truck driver employed by one of the owners of trucks was killed while hauling gravel. The question presented the court was: Who is liable for payment of compensation to the employee? The higher court held that the highway contractor must pay the compensation, saying that this state's law makes it mandatory.

Can't Avoid Sale Tax

Many officials of companies have a false idea that a state's sales taxes may be avoided if the subject of the sale is leased, not sold. This is not so.

For example, in *Dayton Company v. Glander*, 77 N. E. (2d) 605, it was shown that a manufacturing company leased certain machines and paid monthly rentals to the lessee or owner of the machines.

The higher court held that the manufacturer must pay the state's use tax on the amount paid annually for rentals. This court also explained that if the contract was one for sale the manufacturer would pay the state's sales tax.

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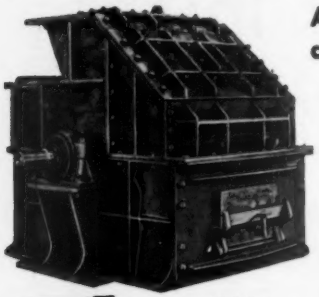

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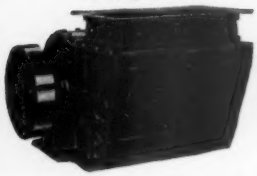

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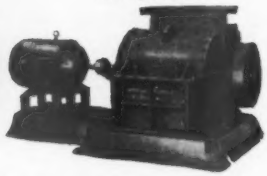

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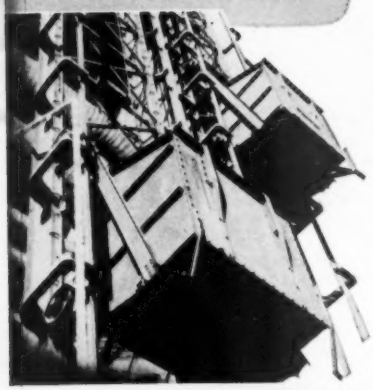

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Void Contract

According to a recent higher court you can't avoid rules and regulations of the Interstate Commerce Commission by making a contract contrary to such rules and regulations.

In *Palmer v. United States,* 75 Fed. Supp. 63, the Federal Court held: The Interstate Commerce Commission has power to establish reasonable rules, regulations and practices with respect to freight car service which includes the use, interchange and return of cars.

This court also held that a contract is void which violates these rules or regulations.

Arbitration Valid

In *H. B. Cramer & Company v. Washburn-Wilson Seed Company,* 195 Pac. (2d) 346, the testimony showed that a buyer and seller entered into an agreement in writing to submit all disputed matters to an abitration committee of three persons. Subsequently a dispute arose over the amount of money owed the seller by the purchaser. The arbitration committee decided the dispute in favor of the seller and held that the purchaser must pay the seller $1,580. The purchaser was dissatisfied with the verdict and appealed to the court.

The higher court held the arbitration agreement and award by the commission valid and effective and refused to listen to testimony presented by the purchaser. The court said: "It is not the province of the courts to substitute their judgment for that of an honest, impartial, and competent arbitrator chosen by the parties. The plaintiff (purchaser) took a chance on the outcome of the arbitration award. He is disappointed with the amount of the award. Plaintiff has not shown that the award is tainted with fraud, partiality, or misconduct."

Not Taxable

According to a recent higher court materials shipped from outside a state to a purchaser are not subject to taxation by the state into which shipments are made.

For illustration, in *Pratt-Gilbert Hardware Company v. O'Neil,* 174 Pac. (2d) 620, the testimony showed that a hardware company sold cement, plaster and other materials to a customer who at once paid the hardware company which did not have the materials in stock, and ordered it to be delivered by the manufacturer to the railroad and shipped directly to the customer.

In subsequent litigation the higher court held that such sales are *not* subject to the state's sales tax law. The court said: "These sales f. o. b. outside the state of Arizona were not sales within the state."

City Waives Right

Modern higher courts consistently hold that state laws and municipal ordinances are valid which require injured persons employed in public works to file a written notice of an injury within a specified period. Failure of an employee to file such notice may forfeit his legal right

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to sue a city, county or state for damages, but city officials may *waive* this legal requirement.

For example, in *City of Beaumont v. Silas*, 200 S. W. (2d) 690, it was shown that a city's ordinance states that an injured employee must file notice of his injury within 60 days; otherwise he cannot sue the city for damages.

An employee engaged in laying concrete pipe was sent on a truck to the city's warehouse to procure sacks of cement. He was seriously injured. The employee did not send a written notice to the city within 60 days, but the city officials continued to carry him on its payroll from the time of his injury until he filed suit against the city almost two years later. The jury decided that the employee could maintain the suit. The higher court approved the verdict saying that it was a question for the jury to determine whether the city officials by their conduct evidenced an intention to waive compliance with the ordinance requiring filing of the written notice of injury within 60 days.

Legal Department

According to a recent higher court any one who receives substantial contributions from a workman is a legal dependent.

For example, in *Waite v. Industrial Commission*, 205 Pac. (2d) 579, it was shown that an 18-year-old employee of the Arizona Sand and Rock Company purchased groceries for his mother and turned over a large portion of his pay to her for support of the family. The higher court held that the mother was a "dependent" and entitled to an award of compensation under Workmen's Compensation Law for the death of her son.

Washing Plant Permit Denied

It is well established law that a city zoning ordinance is not effective to stop operation of an established business. However, such ordinance is valid and effective to prevent any new operations.

For example, in *Allen v. Zoning Board*, 66 Atl. (2d) 369, the testimony showed facts, as follows: One Allen applied for a permit to "erect a 20 by 40 ft. building for a washing plant" on an 18-acre parcel of land in a residence B district, in a city. The testimony showed that the property owner had carried on a washing plant by means of *portable* machinery before the zoning ordinance was enacted.

Forty owners of nearby property filed suit to prevent issuance of the permit on the grounds of depreciation of their property values, noise, dust, and increased highway hazards, especially to children. Since previously the property owner had used only portable machinery, the higher court refused to order the board to issue a building permit for the erection of a building to house stationary machinery to wash gravel. The court said:

". . . The petitioner was denied permission to erect a building 'for a washing plant'. We cannot say that the decision of the board as herein limited was unreasonable or arbitrary."

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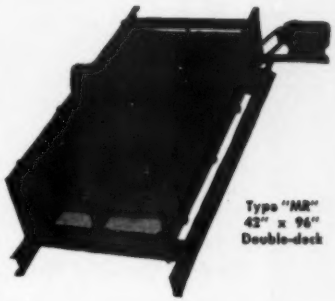

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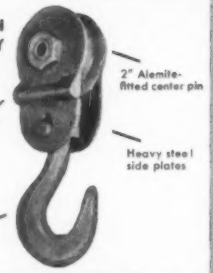

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1. The names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Complete Service Publishing Company, Chicago, Ill.; Editor, W. E. Trauffer, same; Managing Editor, W. E. Trauffer, same; Business Manager, James E. Montgomery, same.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as those of each individual member, must be given.).

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3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of the total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above was.....(This information is required from daily, weekly, semi-weekly and tri-weekly newspapers only.)

JAMES E. MONTGOMERY,
Signature of Business Manager.

Sworn to and subscribed before me this 28th day of September, 1949.
(SEAL) FRANK J. CORNYN.
(My commission expires Sept. 5, 1950.)

Illinois Fluorspar Mining Described in New Publication

Methods and practices used in the development and operation of the Minerva Oil Company's Mine No. 1 in the Cave-in-Rock fluorspar district in southern Illinois are described for the benefit of the mining industry in a circular released today by James Boyd, Director of the Bureau of Mines. The report is one of a series being prepared by the Bureau on mining practices, methods and costs in various mining districts of the United States.

A free copy of Information Circular 7514, *Methods and Costs of Mining Fluorspar from a Flat-Bedded Deposit at Cave-in-Rock, Ill.*, by A. B. Needham, Bureau mining engineer, can be obtained from the Bureau of Mines, Publications Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pa.

traffic news

CENTRAL TERRITORY RAILROADS FREIGHT TRAFFIC COMMITTEE

Docket 87141 (2)—It is proposed to establish on stone, fluxing, furnace or foundry, melting or refractory (unburned), in bulk, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Melvin, O., to Ashland, Ky., 139 cents per gross ton.

Docket 87157 (1)—Proposed to establish on limestone, agricultural, in bulk, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible or cubical capacity, actual weight will apply to Lathrop, O., from Marblehead, O., 205; Marion, O., 216 cents net ton.

Docket 87164 (1)—Crushed stone, or stone screenings in straight or mixed carloads; also agricultural limestone (not reground) in bulk, carload, in open-top cars, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Marengo and Milltown, Ind., to the following points:

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Johnsburg, Ind.	.90
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Docket 87187 (2)—Proposed to establish on limestone, ground or pulverized, unburned, carload minimum weight 60,000 pounds, from Marlo, Mosher and Ste. Genevieve, Mo., to Benton Harbor and St. Joseph, Mich., 337 cents net ton, in open cars; 382 cents net ton in closed cars; to Niles, Mich., 326 cents net ton, in open cars; 371 cents net ton in closed cars.

Docket 87197 (2)—Proposed to establish on slag, crushed or crushed commercial (other than granulated) in open-top cars, carload minimum weight 90 percent of

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S & H
Bortz DIAMOND BITS

3 WAYS to check hidden losses with RICHARDSON FEEDER-WEIGHERS

With today's "break-even" point lower than ever, you can't afford to absorb these HIDDEN LOSSES:

- *Inaccurate weighing*
- *Incorrect proportioning*
- *Time-consuming production "output" records*
- *Inefficient operations from source of supply to delivery point*

. . . in your weighing and conveying operations.

Check this Richardson Equipment . . . it is designed to eliminate the costly inefficiencies which produce these HIDDEN LOSSES.

1 CONVEYOMETER . . . a self-testing machine for feeding and proportioning by weight. A combined feeder and automatic weigher. Dual-belt operation (second belt integral with scale.) Low headroom. Recommended for low tonnages. Ideal for operation in multiple units. Bulletin No. 2140-4

2 CONTINUWEIGH . . . a self-contained, automatic continuous weigher-conveyor which feeds by weight an accurate stream of lumpy, crushed or granular material at a predetermined rate. For high tonnages. Weighing accuracy averaging ½ of 1% guaranteed. Bulletin No. 7144

3 AUTOMATIC HOPPER SCALE . . . a batch-weighing feeder for super-accuracy and control. Capacity up to 1000 lbs. Intermittent discharges are ironed out to a continuous stream when used with conveyor belt for proportioning and blending. Bulletin No. 1449

NOW IS THE TIME TO CHECK THOSE HIDDEN LOSSES!

MAIL THIS COUPON . . . TODAY

Richardson Scale Co., DEPT. P
Clifton, N. J.
Please send me your FREE BULLETINS
No. 2140-4 No. 7144 No. 1449
Name_____
Title_____
Company_____
Address_____
City_____ State_____

"Cape Ann" FORGED

Steel Drop Ball

A Forged Steel Drop Ball of Rugged Design Engineered for Economical Secondary Breakage. Forged connecting link, protected by deep recess, adaptable for swivel or shackle. Strong alloy steel pin. Furnished complete as shown.

2000 to 8000 lbs.

Stock Shipments

for further information write—

Cape Ann Anchor & Forge Co.

Gloucester - Massachusetts

marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Hamilton, O., to Washington Court House, O., 155 cents net ton via B.&O. Railroad direct through Dayton and Exnia, O.

Docket 87203—Sand, all kinds, and gravel, in box cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible or cubical capacity, actual weight will apply from Glass Rock, O., to Mount Vernon, O., 148 cents net ton (includes ExParte 162-B, 166-C and 168-A increases). Proposed rate also applies in open-top cars with tarpaulin or other protective covering.

Docket 87205 (2)—Proposed to establish on gypsum, gypsum rock, plaster, plasterboard and related articles, in carloads, minimum weight 60,000 pounds, from Alabaster and National City, Mich., to Detroit, Mich., 21 cents (not subject to tariffs of increased rates and charges X-162-B, X-166-C, and X-168 Series).

Docket 87213 (2)—Establish on crushed stone, crushed stone screenings, granite, crushed, etc., carload, as described in Central Territory Rate Tariff 197-S, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible capacity, actual weight will apply from Monon, Ind., to various representative points in Michigan, rates shown in Exhibit A.

EXHIBIT A

	Proposed Rates
Austin Lake, Coloma, Sturgis, Vicksburg	177
Adrian, Britton, Ypsilanti	273
Allegan, Fennville, Plainwell, Waverly	194
Alma, Bay City, Clifford, Detroit, Durand, Pontiac, Port Huron, Richmond, Saginaw, Trenton, Vassar and Wyandotte	298
Cement City	222
Eaton Rapids	199
Fairland	172
Sparta	247
Whitehall-Montague	205

Rates in cents per ton (2000 lbs.) include X-162-B and X-166-C increase but subject to ExParte 168 increase.

GENERAL FREIGHT TRAFFIC COMMITTEE
EASTERN RAILROADS

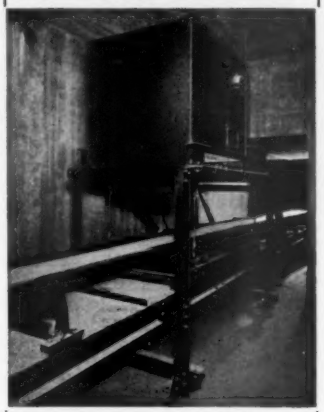
Bulletin G-784 (shippers)—Proposed to establish on limestone, ground or pulverized, unburned, carload minimum weight 60,000 pounds, from Piqua, O., to

	Per Net Ton Open	Closed
Combs, Hardburly, Sunfire, and Tribbey, Ky.	3.04	3.49
Elk Horn Mine No. 6, Ky.	3.26	3.71
Elk Horn Mine No. 4, Ky.	3.15	3.60

Above rates include ExParte 162-B and 166-C increases but are subject to Tariff of Emergency Charges X-168. Reason: On same basis as rates applying from and to other points.

Bulletin G-863 (shippers)—Stone, fluxing, furnace or foundry, melting or refractory (unburned), in bulk, in open-top cars, carloads, minimum weight 90 percent of marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply, to Donora, Pa., from Annandale, Branchton, Dewey, Harrisville, Kaylor, Osbornes, Hillsville, Shaw Junction, and Walford, Pa., $1.39 per gross ton, including ExParte 162-B and 166-C increases but subject to Tariff of Emergency

WEIGH WHILE YOU CONVEY



Be sure of your production figures in belt conveying bulk materials. Ideally suited for all producers of lime, cement, sand, gravel and other bulk materials that require handling by belt conveyor.

The Merrick Weightometer accurately and automatically weighs and records a continuous flow of material passing over the conveyor belt without any interruption to the conveyor operation.

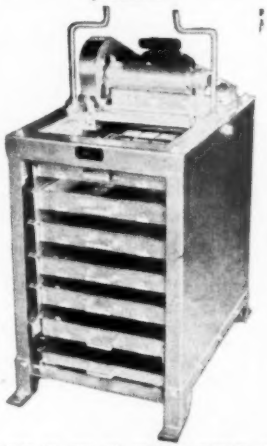
Write us today for full details.

MERRICK SCALE MFG. CO.

180 Autumn St. Passaic, N. J.

GILSON
Mechanical Testing Screen

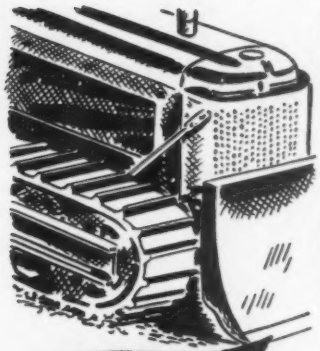
ELIMINATES ERROR from testing procedures



Designed for easy and convenient operation to minimize the human element in handling test samples. Screen trays are independently removable and adjusted to uniform tare weight. Let us send a descriptive bulletin.

GILSON SCREEN CO.

BOX 186 MERCER, PA.



INCREASE TRACTOR Power!

• Worn grouser shoes, retipped with BULLDOG TRACTOR GRIP-LUG provide deep-biting traction on any terrain . . utilize full engine power . . save time, fuel and often contracts! Write for complete information, or contact your equipment dealer for details.

Sole Producers
ALLIED STEEL PRODUCTS, INC.
7831-35 BROADWAY · CLEVELAND, OHIO

IT COSTS NO MORE — TO USE THE BEST

REPLACE WITH "Indian Brand"

Shovel Dippers
Dipper Teeth
Shovel Treads

Crusher Jaw Plates
Mantles—Concaves
Bowl Liners
Roll Shells

Pulverizer Hammers
Grate Bars—Breaker Plates

Ball Mill Liners
Screen Plates

The Frog, Switch & Mfg. Co. CARLISLE, PA.
ESTABLISHED 1881

Charges X-168. Reason: Comparable with rates applying from and to other points.

Bulletin G-901—Proposed to establish on silica, carload, minimum weight 90 percent of marked capacity of car, but not less than 60,000 pounds, in closed cars, from East St. Louis, Ill., and St. Louis, Mo., to Model City, N. Y., $5.86 per net ton, including ExParte 162-B and 166-C increases but subject to Tariff of Emergency Charges X-168. Reason: Comparable with rates applying from and to other points.

ILLINOIS FREIGHT ASSOCIATION DOCKET

Docket IRC 511-875 (MRP 5044)—Establish on sand (except blast, engine, foundry, glass, molding or silica), minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight applies, from Anna, Ill., to West Frankfort, Ill. Present rate: No commodity rate in effect. Proposed rate: Base—83, X-162-98, X-166-108 cents per net ton.

Docket IRC 511-890 (MRP 5070)—Sand and gravel as described in Item 80, under Column "E" of Missouri Pacific Railroad Tariff 7908-K, in straight or mixed carloads, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply, from Chester, Ill., to Sesser, Ill. Present: $1.10 per ton of 2000 pounds, subject to X-162, X-166 increases. Proposed: Establish rate of 94 cents per ton of 2000 pounds, subject to X-162, X-166 increases.

WEEKLY DOCKET AND STATUS REPORT OF PRIOR SOUTHERN FREIGHT ASSOCIATION SUBMITTALS

Docket A 1696 (a)—Proposed to establish a rate on limestone, in open-top cars, minimum weight 90 percent of marked capacity of car from Cedar Bluff to Sturgis and Morganfield, Ky., 80 cents per net ton. Rate not subject to X-162-166-168 increases.

FREIGHT TRAFFIC COMMITTEE TRUNK LINE TERRITORY RAILROADS

Docket TL M-517 (A)—Stone, natural, viz: chips or granules (roofing granules), minimum weight 50,000 pounds from Gladhill, Pa., to Millington, N. J., $3.05 per net ton, subject to ExParte 162-B and 166-C increases and Tariff of Emergency Charges X-168.

Docket TL M-532 (shippers)—Fluxing lime, not ground, in bulk, carload minimum weight 90 percent of marked capacity of car, etc. to Coatesville, Pa., from Annville, Avon, Lebanon, Myerstown, Palmyra and Swatara, Pa., $2.30 per net ton, not subject to ExParte 162-B or 166-C increases but subject to Tariff of Emergency Charges X-168. Reason: To meet competing transportation.

Docket TL M-533 (shipper)—Limestone, crude, crushed, fluxing, foundry or furnace from Thomasville to Tyrone, Pa., carload minimum weight 90 percent of marked capacity of car, etc., $1.88 per gross ton, including ExParte 162-B and 166-C increases, but subject to ExParte 168-A increase. Reason: Comparable with rates applying from other points.

4 days' work! now done in 3 with JAEGER "air plus" pressure*

Model 125 — Runs 2 heavy or 3 medium breakers or heavy rock drill at full 90 lbs.

*With steady 90 lbs. pressure, instead of 70 lbs., air tools hit enough harder and faster to do 30% to 40% more work in the same number of hours.

Jaeger's new standard ratings (the first increase in the industry since 1932) give you the air you need to run today's big tools at steady 90 lbs. pressure — 75 ft. of air instead of 60 — 125 ft. instead of 105 — 185 ft. instead of 160 — 250 ft. instead of 210 — 365 ft. instead of 315 — 600 ft. instead of 500.

If you're interested in cost-cutting — producing 4 days' work in 3 — put a Jaeger Air Plus on your next job.

Model 600 — Runs 2 big 4" wagon drills at 90 lbs., drilling 30% to 40% more footage than you get with any 300 ft. compressor.

See your Jaeger distributor or write

THE JAEGER MACHINE CO.
Columbus 16, Ohio Cable: BIGANLITLE

Pumps • Mixers • Hoists • Towers
Bituminous Pavers • Aggregate Spreaders
Concrete Spreaders • Finishers

Chase Heavy Duty Cotton Bags

Chase Topmill Burlap Bags

Chase Lilipack Paper Bags

Chase Saxolin Open Mesh Bags

Chase Specialties: Mailing Bags, Spiral Tubing, Twines

LET'S BRING THIS DOWN TO EARTH

Quality is a term that is often used broadly, casually. In the case of Chase, quality means more efficient, more economical, and more attractive containers for your products. And here's why:

Chase has been manufacturing bags for more than 100 years—and every year has marked some important improvement: in construction, in design, in printing, or in packaging technique!

Result: you get dependability, positive protection, and you get double-barreled satisfaction, too: 1) when your product is shipped, 2) when your product is received.

There is a Chase bag for every need—write us today for complete details.

MULTIWALL PAPER BAGS

Chase Lined and Combined Bags

Chase Pretty Print Cotton Bags

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CHASE BAGS 1847

CHASE BAG CO. GENERAL SALES OFFICES, 309 WEST JACKSON BLVD., CHICAGO 6, ILL.

BOISE • DALLAS • TOLEDO • DENVER • DETROIT • MEMPHIS • BUFFALO • ST. LOUIS • NEW YORK • CLEVELAND • MILWAUKEE
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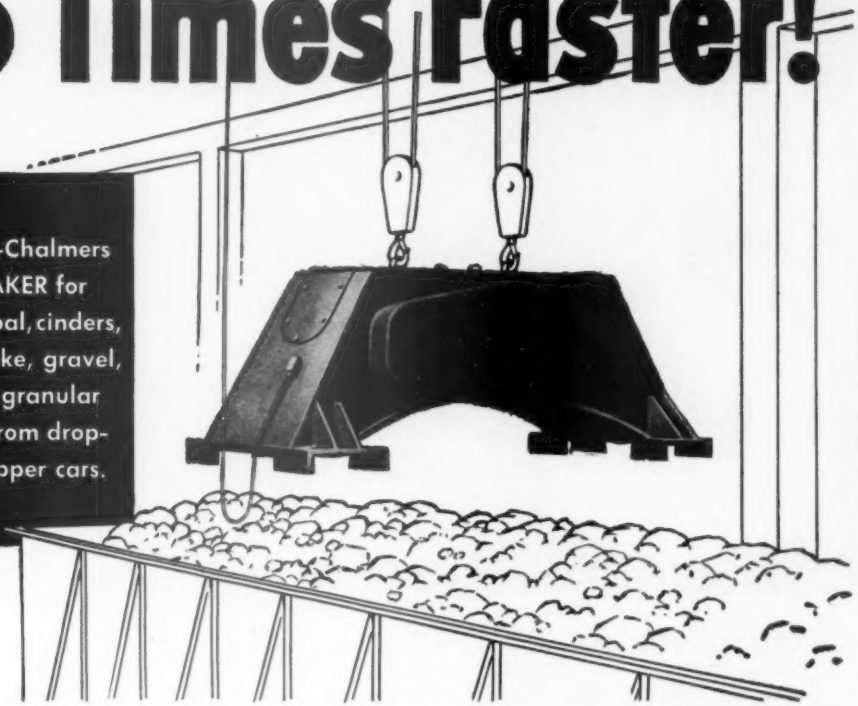
OKLAHOMA CITY • PORTLAND, ORE. • REIDSVILLE, N. C. • HARLINGEN, TEXAS • CHAGRIN FALLS, O. • HUTCHINSON, KAN. • CROSSETT, ARK.

Unload Materials 15 Times Faster!

New! Allis-Chalmers CAR SHAKER for unloading coal, cinders, ore, slag, coke, gravel, and other granular materials from drop-bottom hopper cars.



DO A 30 MINUTE JOB IN 2 MINUTES! Yes, a hopper car which required up to 30 minutes to unload manually can now be unloaded in as little as two minutes with the new Allis-Chalmers Car Shaker!

And you save on safety! Accidents are eliminated as workmen do not have to mount the car during the automatic unloading operation. Vibratory motion of the Shaker is transmitted to the car and loosens bridged granular material so it flows freely through the hopper openings.

The Shaker is driven by a 15 hp, high torque, integrally enclosed Allis-Chalmers motor — mounted on rubber to protect motor from severe vibration.

For complete information on how this new Car Shaker can help *you* save time and money, contact your nearby A-C Sales Office. Or send in the handy coupon below.

CHECK THESE SEVEN MONEY AND LABOR SAVING FEATURES!

1. Motor is located inside body; drive completely covered by guard.
2. Size of body and shoes designed to fit all hopper cars operating on the North American continent.
3. Simplified mechanism reduces number of working parts.
4. Hydraulic arrangement for bearing removal.
5. Car Shaker heavily designed—Stress relieved after welding and before machining.
6. Shaker is well balanced for ease in handling by crane or hoist.
7. Designed for use with noise dampening pads where required, or with removable wearing shoes.

A-2857

ALLIS-CHALMERS, 974A SO. 70 ST. MILWAUKEE, WIS.

Please send Car Shaker Bulletin 07B7221.

Name_____

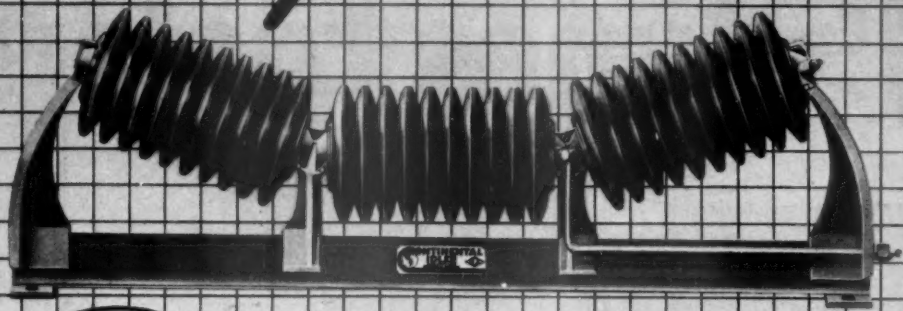
Title_____

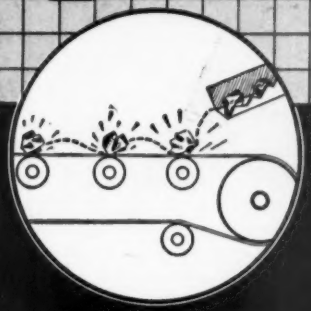
Firm_____

Address_____

ALLIS-CHALMERS

Save your Belts!





Use CONTINENTAL IMPACT IDLERS

Continental Impact Idlers under the loading point of your Conveyors will reduce damage to the belt covering and prevent breakdown of the carcass, thus lowering your belt cost per ton of material handled.

The design of Continental's Rubber Disc Impact Idlers has been proved superior by laboratory tests. The discs are mounted on a steel roll equipped with Timken Bearings and have the same sturdy construction as Continental's Standard Idlers so far as bearings, shaft size and grease seals are concerned.

Send us your orders and inquiries. Literature available on request.

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INDUSTRIAL DIVISION

CONTINENTAL GIN COMPANY

BIRMINGHAM, ALABAMA

ENGINEERS CGC ATLANTA • DALLAS • MEMPHIS CGC MANUFACTURERS

Specify Thermoid

The Thermoid Impregnation Process insures a deeper penetration of rubber between the threads of the yarn, which encases each individual strand with protective rubber. The rubber acts as a sheath between the strands and prevents the destructive abrasive action as the product is flexed in use. To obtain the required rubber penetration, the twist of the yarn must be to exact specifications. With the yarn twisted too tightly, proper penetration of the rubber compound is impossible. This condition produces abrasion, causing premature failure. On the other hand, if the yarn is twisted too loosely, the product lacks tensile strength. Thermoid has discovered the optimum twist of the yarn which assures maximum rubber penetration and greatest strength. The development of Thermoid Impregnation Process is another step forward in Thermoid's planned program of product improvement, assuring maximum service and lower operating costs to industry through the use of Thermoid Industrial Rubber Products.

Versicon Hose Cuts Costs

Now available . . . a multi-purpose hose designed for superior performance with virtually any liquid or gas . . . Thermoid Versicon Hose. It is made with neoprene tube and oil-resistant cover—with high tensile rayon cords to insure maximum strength, light-weight and flexibility.

Versicon, another of the famous quality rubber products made available to industry through Thermoid research, is the answer to a long felt need. Now your nearest Thermoid distributors can supply you with *one hose* for your requirements. Now you can cut your costs and reduce inventory. Versicon eliminates the need for special hose . . . Versicon *is* the special hose. Available from 3/16" to 2½" for use with air, water, oil, gases and virtually all fluids in lengths from 50′ to 500′ depending on size.

It will pay you to ***Specify*** Thermoid!

Thermoid Quality Products: Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Molded Products • Industrial Brake Linings and Friction Materials.

Thermoid Company

Main Offices and Factory • Trenton, N. J., U. S. A.
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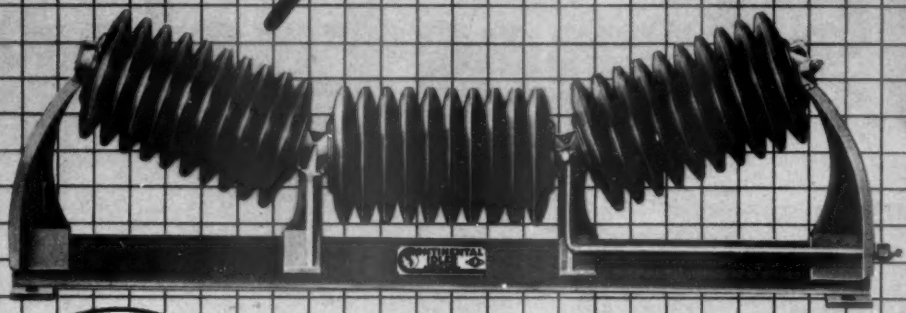
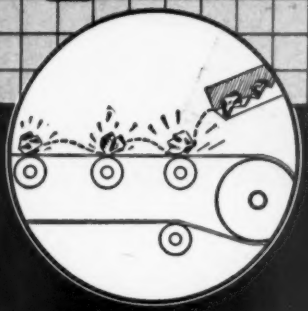
Industrial Rubber Products • Friction Materials • Oil Field Products

Save your Belts!





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Send us your orders and inquiries. Literature available on request.

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BIRMINGHAM, ALABAMA

ENGINEERS CGC ATLANTA • DALLAS • MEMPHIS CGC MANUFACTURERS

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Versicon Hose Cuts Costs

Now available . . . a multi-purpose hose designed for superior performance with virtually any liquid or gas . . . Thermoid Versicon Hose. It is made with neoprene tube and oil-resistant cover—with high tensile rayon cords to insure maximum strength, light-weight and flexibility.

Versicon, another of the famous quality rubber products made available to industry through Thermoid research, is the answer to a long felt need. Now your nearest Thermoid distributors can supply you with *one hose* for your requirements. Now you can cut your costs and reduce inventory. Versicon eliminates the need for special hose . . . Versicon *is* the special hose. Available from 3/16" to 2½" for use with air, water, oil, gases and virtually all fluids in lengths from 50′ to 500′ depending on size.

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Amsco-nagle

MATERIALS HANDLING

Pumps

Amsco-nagle 6" Type "T" frame 19 pump for handling surplus sand at the Chillicothe, Ohio plant of Southern Ohio Quarries Company.

1. Simple design—only three wearing parts.
2. Easy replacement of impeller, casing, and plate without disturbing bearing stand or drive.
3. Water end parts of austenitic manganese steel or ABK Metal, whichever is best suited for the particular job.
4. Stuffing box accessible from above or below.
5. Split bearing stand—easy to dismantle.
6. Initial high efficiency maintained with slippage seal adjustment.
7. Oversized, grease lubricated, deep-grooved ball bearings for long wear with minimum servicing.

Good for BAD mixtures

No matter how abrasive the material to be pumped, or how laden with solids, there is an Amsco-nagle Pump for the job. In the pumping of slurries, coal fines, sand and gravel aggregates, sludge and similar materials, an Amsco-nagle will outpump and outwear ordinary equipment by a substantial margin. In many applications Amsco-nagle Pumps are performing with satisfaction where other pumps have failed.

Amsco-nagle pumps are manufactured in sizes 6" to 16", for capacities up to 10,000 G. P. M. and for heads up to 200 feet (250 feet for certain applications). We will be glad to supply you with full information. Write for Bulletin 547-IP for data on all types of Amsco-nagle Industrial Pumps.

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS, ILL.

Foundries at Chicago Heights, Ill., New Castle, Del., Denver, Colo., Oakland, Calif., Los Angeles, Calif., St. Louis, Mo.
Offices in principal cities. In Canada: Joliette Steel Limited, Joliette, Que.

GM Diesel-powered Koehring 605 dragline with 1¼ yd. bucket, loads shale in Euclid bottom dump. The GM Diesel-powered Euclids haul 17 yard loads up a 15% grade climbing out of the cut.

Allis-Chalmers HD-19 pulling a 12-ton "rooter" scrapes heavy shale off rock vein in final stage of stripping at National City, Michigan. A General Motors 6-71 Diesel powers the HD-19.

GM Diesel-powered Euclid loader, pulled by Allis-Chalmers HD-19 tractor, teams up with 7 GM Diesel-powered Euclid bottom dumps to move as much as 150,000 yards of earth a month.

100% GM DIESEL POWER—"100% PLEASED"

Says the Contractor

Stripping a 55-foot overburden of Michigan's hard clay, heavy soil and shale to bare gypsum deposits takes plenty of rugged, reliable power. That's why A. S. Leffler, contractor, standardizes on General Motors Diesels. Leffler operates 16 of them.

"We get more work done at about one-half the cost," says Mr. Leffler. "We went to the one make of engine 100% because of our previous satisfactory experience. Standardization on GM Diesels also helps keep our parts inventory low."

Remember all GM Series 71 Diesels have the same bore and stroke. Thus most wearing parts are interchangeable between engines of different sizes. Result: lower parts inventory, less time out for repairs, a big reduction in maintenance costs.

No wonder so many operators rely on these brawny 2-cycle Diesels to speed production and trim costs. You too, will find it pays to specify GM Series 71 Diesels. Get the facts from your local GM Diesel distributor.

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES...*Up to 200 H.P.* **DETROIT 28, MICHIGAN** MULTIPLE UNITS...*Up to 800 H.P.*

GENERAL MOTORS

DIESEL BRAWN WITHOUT THE BULK

GM GENERAL MOTORS DIESEL POWER

THE NEW DU PONT "DETECT-A-METER"

A Single Instrument With 2 Uses

1. A stray current detector 2. A blasting galvanometer

Stray currents have always been a source of danger near blasting circuits. The present increasing use of electric blasting and large electrical equipment increases the danger of stray currents leaking into the blasting system.

The Du Pont "Detect-a-Meter" is the first practical instrument devised for stray current detection. It has two scales: 1—low-range from 0 to 2.5 volts, allowing detection of voltage as low as 0.1 volt, and 2—high-range from 0 to 25 volts. Works equally well on either AC or DC. By finding stray currents before hooking up, you can take steps to eliminate these dangerous conditions.

The "Detect-a-Meter" also performs all the functions of the well-known Du Pont Blasting Galvanometer for checking blasting caps and firing circuits before connecting up. Complete instructions supplied with each instrument.

Today—take an important step toward greater safety in blasting operations by obtaining complete information about the new Du Pont "Detect-a-Meter." It's an inexpensive investment in accident prevention. See your Du Pont Explosives representative, or write E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington 98, Delaware.

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"Cavalcade of America"
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The new "Detect-a-Meter" is provided with durable genuine leather case with shoulder straps. Actual size of meter —1¾ x 3¼ x 4⅜ inches.

BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*

MURPHY DIESELS
start instantaneously, even in the coldest weather

MURPHY DIESEL

IF you've ever gone through the cold morning ritual of starting ordinary diesels, you've got a surprise in store for yourself the first time you start a Murphy Diesel. Hot or cold she kicks off like a well kept automobile engine at just a touch of the electric starter lever. You don't need blow torches or tremendous patience to start a Murphy Diesel even at zero temperatures. In the words of John S. Wenger of Wenger and Sensenig, Paradise, Pa., *"The easy starting on cold mornings...leaves nothing to be desired."*

Right now, before the cold really sets in is the time to get ready. Have your Murphy Diesel Dealer give you full details on Murphy Diesel cold weather starting and the many other advantageous features of Murphy Diesel Power—or write direct.

MURPHY DIESEL COMPANY
5307 West Burnham Street • Milwaukee, 14 Wisconsin

Heavy duty power

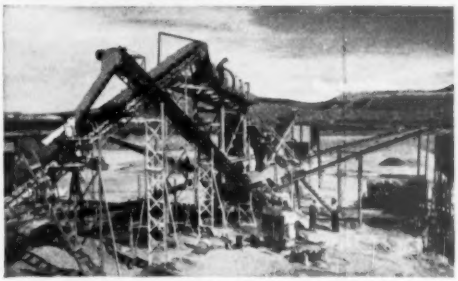
for rock crushing

Murphy Diesel Engines and Power Units for portable or stationary crushing plants, 90 to 220 H.P. Generator Sets, 60 to 133 K.W.

UNIVERSAL

HAS THE ANSWER TO YOUR WASHING PROBLEMS WITH *"STREAM-FLO"* ENGINEERED WASHING PLANTS

Stationary washing plant with mechanical feed, conveyors, vibrating screen; water sprays, sand screws, loading bin, primary and secondary crushers, and stock piling conveyors. Electric powered.



Crushing screening and washing plant with primary jaw crusher, secondary roll crusher, scrubber classifier, conveyors, and bins.

Universal washing and screening plant with plate feeder, conveyor, two deck screen, 3-compartment bin, sand screw, and miscellaneous sprays, chutes and flumes. Gasoline or diesel power.

WRITE FOR COMPLETE FACTS

● Universal builds stationary and portable plants to meet any washing need. "Basic Unit" construction means lower initial cost, and "Stream-Flo" engineering assures a well balanced, smooth operating plant. Result—more yards per hour at less cost per yard. For profit-making production of clean, properly sized aggregate, investigate Universal.

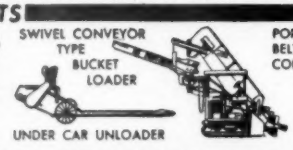
UNIVERSAL ENGINEERING CORPORATION

619 C AVENUE N. W., CEDAR RAPIDS, IOWA

DIVISION OF PETTIBONE MULLIKEN CORPORATION

ENGINEERS AND BUILDERS OF "STREAM-FLO" ROCK, GRAVEL, AND LIME PLANTS
SCREENING AND WASHING PLANTS, CONVEYORS, APRON FEEDERS

OTHER PETTIBONE MULLIKEN PRODUCTS



PETTIBONE MULLIKEN CORP.
CHICAGO, ILLINOIS

GEORGE HAISS MFG. CO., INC.
BRONX, NEW YORK, N. Y.

Cement dust can be controlled at a profit. It can be collected at the source, bagged and sold to more than pay the cost of the necessary equipment . . . when you use a Dustube.

The profit possibilities of this recovery operation were quickly discovered at the midwestern plant of one of the industries major producers. The installation of Dustubes in this plant put dust collection on a paying basis.

Twenty-one continuous automatic Dustubes are now used to ventilate their grinding operations for producing more than 6,000,000 barrels of cement per year. These Dustubes thoroughly remove the dust at its source and feed it back into the production system.

Dustube traps the dust with nearly 100% efficiency to increase the productivity of men and machines. Its simplicity of construction keeps operating costs low and restricts maintenance. Shaking periods are short. You can always be sure that a Dustube is functioning at top efficiency because tubes are visible for immediate examination . . . there is nothing to disassemble for inspection.

Turn your dust losses into extra profits. Have Dustube engineers make recommendations on the type of installation that will pay you the biggest return. There is no obligation, of course.

Write today for complete information about the many advantages of Dustube Collectors. Ask for Catalog 72-A.

American dustube
DUST COLLECTORS
OFFICES IN PRINCIPAL CITIES

AMERICAN WHEELABRATOR & EQUIPMENT CORP., 430 S. Byrkit St., Mishawaka 17, Ind.

"You don't have to nurse 'em"

says still another Gravel Co. superintendent

Pit men agree that Simplicity Gyrating Screens are about as delicate as a steel bridge! When it comes to day-after-day, year-after-year satisfactory operation, they really stand out.

This ability to run day and night for long stretches without shutting down for repairs is a result of built-in quality and features. Only Simplicity Gyrating Screens give you all these:

- Dust-sealed Alemite lubricated roller bearings.
- Counterbalanced eccentric shaft.
- Opposed rubber corner supports.
- Four way tension on springs.
- Double crowned screen cloth surface.
- Unit-fabricated, stress-relieved construction.

A valuable booklet entitled "Simplicity Gyrating Screens" is yours for the writing. It will show you why Simplicity can save you money, labor and maintenance delays. Write for it today.

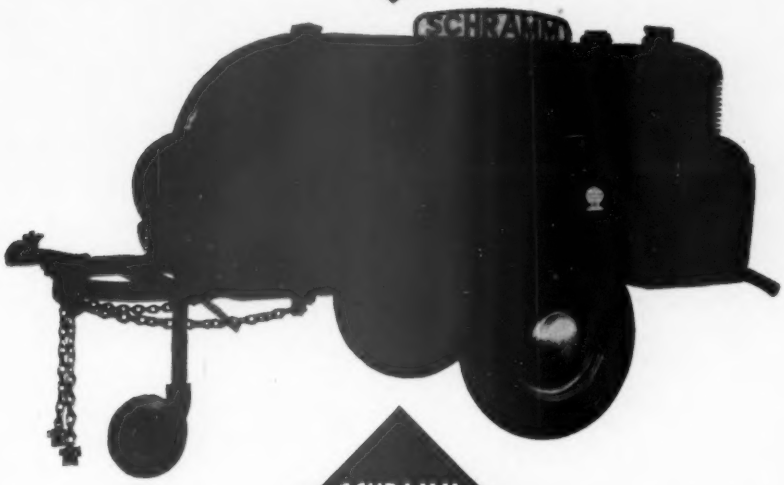
Sales representatives in all parts of the U.S.A.
For Canada: Canadian Bridge Engineering Co., Ltd., Wallaceville, Ontario
For Export: Brown & Sites, 30 Church St., New York 7

Simplicity
TRADE MARK REGISTERED

ENGINEERING COMPANY • DURAND, MICHIGAN

SCHRAMM'S NEW *Unistage* COMPRESSOR

RESULT OF 50 YEARS ENGINE *and* COMPRESSOR MANUFACTURING



SCHRAMM MODEL 105 *Unistage*

GASOLINE ENGINE DRIVEN COMPRESSOR

- Easier, cleaner air because it is watercooled.
- Lower fuel consumption with *Pneumatic* saving up to 50%.
- Eliminates intercooling with its manifolds, gaskets, etc.
- Entire unit built by SCHRAMM, therefore, one responsibility.
- Design includes mechanical overhead valves.
- Eliminates two staging with its difficulties in servicing.
- Engine and compressor parts largely interchangeable.
- Designed for continuous 24 hour service.

SIZES INCLUDE 20—35—60—105—210—315—420—Cu. Ft. *WRITE FOR BULLETIN 4913*

SCHRAMM INC. THE COMPRESSOR PEOPLE • WEST CHESTER • PA.

There's a good reason why..

are near

CEMENT LEGEND

- ● CEMENT PRODUCING PLANTS
- ▲ DISTRIBUTING PLANTS

BEMIS LEGEND

MULTIWALL PAPER SHIPPING SACKS

- SALES OFFICE
- INK MILL
- PAPER MILL
- THREAD AND TWINE MILL
- PACKAGING SERVICE

Bemis

We planned it that way—to give you better bag service . . . quicker delivery . . . closer personal attention. Your bag order goes to a nearby Bemis office and shipment is made from there or a plant conveniently close. Geography is important. It means time and money saved for you.

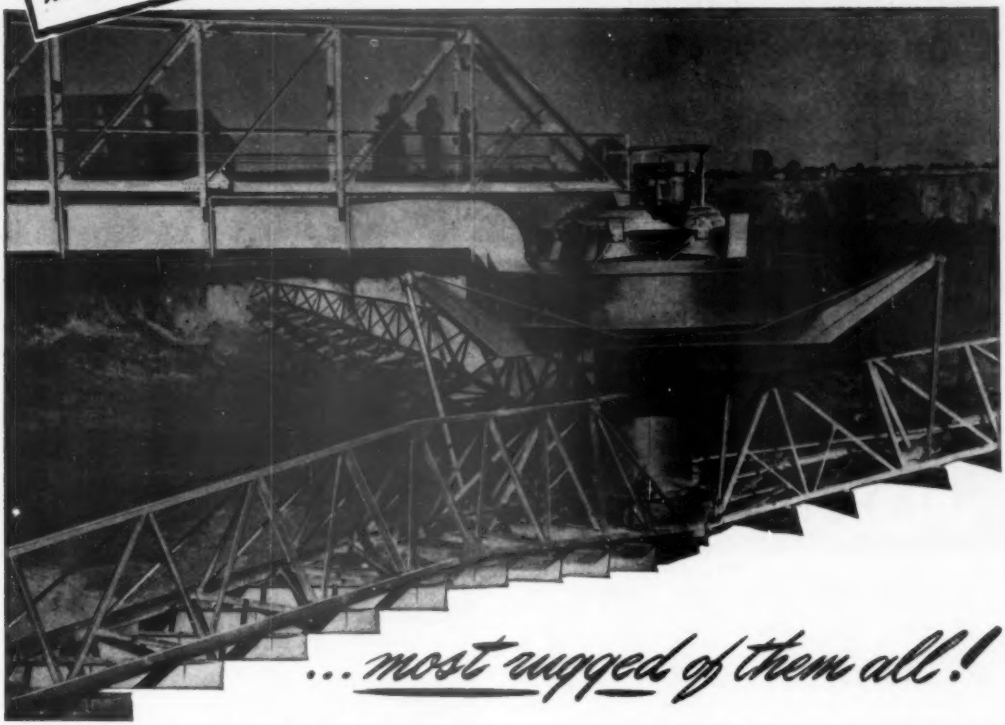
Not only are Bemis plants *located* to serve you well . . . they are *geared to serve you in every way.* Plant layout or packaging service . . . emergency service . . . whatever your need, we're close at hand to help you. And NOW.

PEORIA, ILL. • EAST PEPPERELL, MASS. • MOBILE, ALA. • VANCOUVER, WASH. SAN FRANCISCO, CALIF. • WILMINGTON, CALIF. • HOUSTON, TEXAS

Baltimore • Boise • Boston • Brooklyn • Buffalo • Charlotte • Chicago • Cleveland • Denver Detroit • Indianapolis • Jacksonville, Fla. • Kansas City • Los Angeles • Louisville • Memphis Minneapolis • New Orleans • New York City • Norfolk • Oklahoma City • Omaha • Phoenix Pittsburgh • St. Louis • Salina • Salt Lake City • Seattle • Wichita

What's NEW... in heavy duty equipment?

The Dorr Type PL Parallel Lift Hydroseparator



... most rugged of them all!

Sweeping statement? Perhaps . . . but look at these facts and see why the new Dorr Type PL tops them all for heavy duty operation.

PL MEANS PARALLEL LIFT OF RAKES IN CASE OF OVERLOAD . . . As overload is encountered, torque causes entire raking mechanism to raise with rakes parallel to tank bottom . . . no matter where point of load occurs.

HYDRAULIC LIFT . . . In case of shut-down, a powerful hydraulic lifting device will raise raking mechanism up to 2 feet off tank floor. Parallel and hydraulic lifts are integrally designed . . . with hydraulic lift cylinders acting as shock absorbers in case of sudden torque loads and eliminating sudden drop of raking mechanism.

POWER PLUS IN DRIVE . . . Drive unit is low center of gravity, balanced spur gear drive delivering 800,000 foot pounds torque. Twice as powerful as any drivehead yet developed for similar duty!

TRIANGULAR CONSTRUCTION THROUGHOUT . . . Three rake arms . . . of triangular truss construction. All Type PL structural members form triangles for maximum rigidity and strength.

"Non plug" center cone discharge, kept open by a special "tickler" scraper . . . simple, single turntable design . . . both add to the ability of the Type PL to handle the heaviest loads without balking.

Where units of 100' diameter and larger are required in phosphate rock, sand, coal or any field where the going is really tough . . . the Dorr Type PL is the answer. A Dorr engineer will gladly give you more detailed facts on this new development.

DORRCO

THE DORR COMPANY, ENGINEERS
570 LEXINGTON AVE., NEW YORK 22, N. Y.
ATLANTA • TORONTO • CHICAGO
DENVER • LOS ANGELES
RESEARCH AND TESTING LABORATORIES
WESTPORT, CONN.
SUGAR PROCESSING
PETREE & DORR DIVISION, NEW YORK 22, N. Y.
ASSOCIATES AND REPRESENTATIVES
Dorr Technical Services and Equipment Are Also Available Through Associated Companies and Representatives in the Principal Cities of the World. Names and Addresses on Request.

DORR
RESEARCH • ENGINEERING • EQUIPMENT

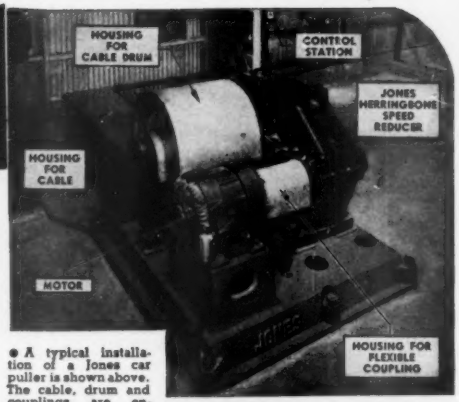
For spotting your cars-
JONES CAR PULLERS

YOU will be surprised how much time can be saved in the spotting and switching of cars by using a Jones car puller. These sturdy, compact units will speed up car handling to the point where they soon pay for themselves in the saving of time and labor.

These car pullers are built by Jones as complete units with motor included if desired, or with base to take standard motor, as supplied by the purchaser. The cable drum is driven by a Jones triple reduction Herringbone speed reducer and the control station may be located at a point to give the operator a clear view of the tracks and spotting positions.

Even in plants where comparatively few cars are handled it has been found that a Jones car puller more than pays its way. Prices and complete information will enable you to judge whether such an outfit might pay out in your plant. Write for complete information.

W. A. JONES FOUNDRY & MACHINE CO.
4441 Roosevelt Road, Chicago, Illinois



● A typical installation of a Jones car puller is shown above. The cable, drum and couplings are enclosed by sheet metal housings as an extra precaution in this installation to eliminate all hazard from moving parts.

● A complete Jones car puller unit. These outfits are for use with wire rope and are manufactured in a wide range of capacities to suit the number of cars to be handled in each plant.

Jones HERRINGBONE • WORM • SPUR • GEAR SPEED REDUCERS
CUT AND MOLDED TOOTH GEARS • V BELT SHEAVES
ANTI FRICTION PILLOW BLOCKS • PULLEYS
FRICTION CLUTCHES • TRANSMISSION APPLIANCES

JEFFREY
HAS LARGE IMPACT CRUSHERS

LARGE AND SMALL PULVERIZERS
For Ag Stone

CATALOG NO. 710-A — SEND FOR IT

The Jeffrey Manufacturing Company
917 North Fourth Street, Columbus 16, Ohio

Baltimore	Cleveland	Houston	Philadelphia
Birmingham	Cincinnati	Huntington	Pittsburgh
Boston	Detroit	Jacksonville	Scranton
Buffalo	Denver	Milwaukee	St. Louis
Chicago	Harlan	New York	Salt Lake City

11,165

SCREENING COSTS...

Executives interested in cutting screening costs should have a copy of this new Book No. 2154, containing information on the new Link-Belt "CA" (Concentric Action) vibrating screen. Setting new records daily through extreme smoothness in starting and stopping; increased amplitude at high speeds; unobstructed screening surface; many other features. Can be used for both medium and heavy duty sizing of a large variety of materials as well as for scalping, dewatering or rinsing operations. Send for Book No. 2154.

LINK-BELT COMPANY
Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Houston 3, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8. Offices in Principal Cities.

CA CONCENTRIC ACTION
LINK-BELT VIBRATING SCREEN

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT & QUARRY

AT LAST!

chem brick

A FACE BRICK OF HIGHEST QUALITY—

MADE WITH THE CHEAPEST MATERIALS KNOWN TO DATE

PITTSBURGH TESTING LABORATORY

PITTSBURGH, PA.

April 13, 1949

REPORT
TESTS OF "CHEM" BRICK
MANUFACTURED BY
DETROIT BRICK & BLOCK CO.

COMPRESSION
(½ Brick Crushed Flat-wise)

NO. OF SAMPLES	LBS. PER SQ. INCH
5	Average 4,910

MODULUS OF RUPTURE

NO. OF SAMPLES	TOT. LOAD LBS ON IN.
5	Average 973

ABSORPTION
(24 Hour Immersion - ½ Brick)

NO. OF SAMPLES	PERCENT ABSORPTION
5	Average 11.4

All samples submitted by Detroit Brick & Block Co.

PITTSBURGH TESTING LABORATORY

MANAGER DETROIT DISTRICT

April 8, 1949

REPORT - FREEZING & THAWING

METHOD OF TEST - A.S.T.M. Designation: C7-44 covering Standard Methods of Sampling & Testing Brick for a total of 51 cycles.

CONCLUSIONS - Test indicated compliance with specification requirements for freezing and thawing test.

Respectfully submitted,
PITTSBURGH TESTING LABORATORY

Prdct Lab
Cement & Concrete Section

Detroit Brick & Block Company, first licensee by Jackson & Church Company to manufacture "CHEM BRICK"

"CHEM BRICK" . . .

the sensational, new building material . . . passes the A.S.T.M. specifications for first quality face brick and the most exacting freezing and thawing tests . . . yet no ingredient costs more than $2 per ton, including binder.

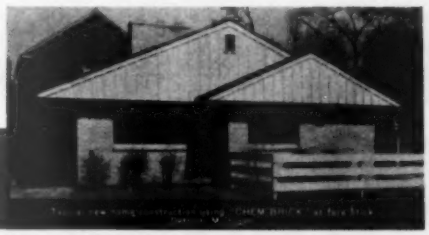
"CHEM BRICK" requires no cement or commercial lime . . . is made only with sand and waste materials.

A REAL HIGH QUALITY FACE BRICK WHICH CAN BE MADE CHEAPER THAN ANY COMMON BRICK ON THE MARKET TODAY

This quality product is finding a ready market in the Detroit area where it has brought usually expensive brick veneering within the reach of average purses. In addition to its low cost other features are its distinctive finish, color and uniformity which give any building that "quality appearance" when used as a facing material.

Besides being a fine face brick . . . "CHEM BRICK" is an all-purpose brick because of its low cost of manufacturing.

Boxed at left are excerpts from test reports on "CHEM BRICK" made by Pittsburgh Testing Laboratory. Note distinctive appearance of home pictured utilizing "CHEM BRICK" as facing material.



JACKSON & CHURCH COMPANY
SAGINAW, MICHIGAN

HERE'S WHY THEY ASK FOR 'INCOR'

CONCRETING 84 FLOORS IN 65 WORKING DAYS

Miracle? No—It's KNOW-HOW!

CONCRETING better than a floor a day, it took just 65 working days to erect superstructures of the ten units, 7 and 8 stories high, for Eastchester Houses—New York City Housing Authority's 874-apartment project, 950,000 sq. ft. floor area, in the Bronx.

Miracle? No . . . *Know-How!* Dividing the job into its components and dovetailing them into a cycle, trained crews erect and strip column, beam and slab forms, set reinforcing, place and finish concrete. Nobody in anybody's way, each crew progressing cycle to cycle.

Line production that gets utmost economy out of 'Incor' 24-Hour Cement . . . a minimum of forms kept almost constantly in motion . . . dependable 'Incor'* high early strength to get you back on the cycle quicker, when delays occur.

That's why leading Ready-Mix Operators make 'Incor' available at all times, as part of their good service — additional customer good-will!

*Reg. U. S. Pat. Off.

TIMETABLE OF ONE UNIT AT EASTCHESTER

A crew assembles column forms, then moves to next building.

Next crew erects beam forms—each crew trained in its own job.

Placing slab forms and layout for mechanical trades.

Setting reinforcing steel and installing pipe work.

Concreting second floor—other crews on respective cycles.

Concreting roof (9th floor)—84 floors in 65 working days!

NEW YORK CITY HOUSING AUTHORITY: EASTCHESTER HOUSES, Bronx, N. Y.
Architects: **HARRISON & ABRAMOVITZ**
Engineers: **SEELYE, STEVENSON & VALUE**
Ready Mix 'Incor' Concrete: **COLONIAL SAND & STONE CO., Inc.**
General Contractor: **CORBETTA CONSTRUCTION CO., INC.**
all of New York City

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

Offices: ALBANY • BETHLEHEM, PA. • BIRMINGHAM • BOSTON
CHICAGO • DALLAS • HOUSTON • INDIANAPOLIS • JACKSON, MISS.
KANSAS CITY, MO. • NEW ORLEANS • NEW YORK • NORFOLK
ST. LOUIS • PHILADELPHIA • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 27,000,000 BARRELS ANNUAL CAPACITY

NEWS OF CONCRETE MANUFACTURERS

Gelbman, Inc., Announces New Sintering Laboratory And Sales Office

Gelbman, Inc., announces the opening of a new sintering laboratory and sales office for Stearns-Gelbman sintering machines and Stearns concrete products equipment, located at 772 McLean Avenue, Yonkers 5, N. Y.

Louis, Martin and Lawrence Gelbman, who have been associated with the manufacture of concrete products for many years and were instrumental in introducing the vibration-under-pressure principle to the field are now devoting their time to the needs of the industry by the further development of sintered lightweight aggregates.

Gelbman, Inc., in conjunction with Stearns Manufacturing Company, will use this laboratory for experimental work to analyze the sintering techniques required for various materials submitted by the industry.

Synthetic Stone Resembles Costly Colorado Flagstone

Arthur F. Johnson, a mining engineer of Boulder, Colo., has developed a synthetic process to reproduce the beautiful but expensive red Colorado flagstone as cheaply as brick.

With pumice, cement, sand, coloring agents, and water scientifically mixed and vibrated under tremendous pressure in a mold, Mr. Johnson has developed waterproof, soundproof and insulated blocks. These lightweight units reproduce the natural color, the rough contour, and the long horizontal lines of natural Colorado flagstone at about one-third the cost of the natural stone.

Mr. Johnson has named the new material Colorado-Stone. He will establish a plant in Denver, where a contractor already has launched plans to build 14 homes utilizing the synthetic flagstones.

By a strange chance, the idea for Colorado-Stone was inspired by the Hotel Tokyo, which Johnson visited a few years ago on a trip to Japan. The Hotel Tokyo is constructed of synthetic marble.

McLean Named President Of Jaeger Machine Company

Ray McLean, for the last four years executive vice-president of The Jaeger Machine Company, Columbus, O., was elected president at the company's annual meeting on September 17. He succeeds O. G. Mandt, with whom he has for some time been sharing executive responsibilities.

Mr. McLean joined the Jaeger organization in 1939 as manager of its Truck Mixer Division and became a vice-president and director in 1942. He is well known in industry activities, being currently a director of the Construction Industries Association. He has also served two terms as a director of The National Ready Mixed Concrete Association.

Ray McLean

Coming Events

November 2-4, 1949—Montgomery, Ala. Fall meeting, Southeastern Concrete Pipe Association.

November 21-22, 1949—Atlanta. Meeting of the Southeastern Division of the National Concrete Masonry Association, Atlanta-Biltmore Hotel.

January 15-19, 1950 — Chicago. 31st annual meeting, Associated Equipment Distributors, Stevens Hotel.

January 23-27, 1950 — Chicago. 20th annual convention and exhibit, National Ready Mixed Concrete Association, Stevens Hotel.

February 6-9, 1950 — Chicago. 30th annual meeting, National Concrete Masonry Association, Hotel Sherman.

New Minneapolis Firm Manufacturing Sakrete In $50,000 Addition

According to an announcement recently released at Minneapolis, Minn., the Twin City Concrete Products Company has been organized for the manufacture and distribution of Sakrete, a dry, pre-mixed concrete. Heading the new firm is J. M. Lambert, president of the Twin City Concrete Pipe Company of Minneapolis.

The Sakrete will be made in a $50,000 addition to the pipe company's plant, and operation was said to begin scheduled to begin at once. Mr. Lambert stated that he expected production to proceed at the rate of about 1,000 bags per day.

Twin City Concrete Products will be the 22nd Sakrete licensee, operating in 34 states. The process was developed 13 years ago by Sakrete, Inc., at Cincinnati, O.

Kansas Pavements Checked By New Durability Tester

A new electronic device, the sonoscope, is being currently employed in Kansas in an extensive series of tests to determine the strength, hardness and life expectancy of new concrete pavements. It measures the speed of sound waves as they pass through the pavement, and is based upon the fact that sound waves travel much more rapidly through dense, hard material than through that which is more porous and less substantial. Thus, by measuring the density of the concrete, the lasting qualities of the highway can be determined and the most satisfactory mixes singled out.

The sonoscope was developed in Canada for government officials. After observing Canadian tests, members of the Portland Cement Association's staff built their own instrument.

Raymond Concrete Pile Co. Shows Increased Earnings

According to officials of the Raymond Concrete Pile Company of New York, net earnings of the concern for the first six months of this year amounted to about $2.50 per share on 369,786 common shares. For the comparable period last year the net earnings were $2.25 per share. The stock was split two-for-one in April, 1949. Earnings for this year are expected to exceed the $5.99 per share of 1948.

Commenting upon the 50-cent dividend declared in July of this year, M. M. Upson, chairman, stated that the rate is expected to be maintained or possibly improved. It was revealed that the company is spending more than $1,000,000 for expansion and improvements this year.

• Seen in the accompanying photograph is The Carter-Waters Corporation exhibit at the 55th annual Public Works Congress and Equipment Show held in Kansas City, Mo., on September 18 to 21. Featured in the display were the following Carter-Waters products: Blok-Mesh, high-tensile reinforcing steel for masonry walls; Blok-Seal, portland cement base paint; haydite aggregate; haydite concrete building block; and Saturock, a cold asphaltic concrete for surfacing and maintaining streets, sidewalks, etc.

A part of the exhibit was devoted to Hunt Process Clear (see right background), a membrane curing compound for concrete, manufactured by The Hunt Process Company, Los Angeles, and The Carter-Waters Corp.

Smithwick Aggregates Plant To Be Completed by January

Construction has started on the new $200,000 Smithwick Concrete Products Co. expanded-shale aggregates plant in Portland, Ore. The new facilities, located adjacent to the concern's modern concrete-block plant in the northeast section of the city, will provide for the future lightweight aggregate needs of the block plant. Excess material will be marketed commercially throughout the Pacific Northwest.

The Smithwick deposit is in the Keasy shale, on the S. P. & S. Railroad about 12 miles south of Vernonia, Ore. The quarry site was leased from the railroad. Raw shale will be shipped by rail to the new bloating plant, which is expected to be completed and in operation by January, 1950.

Kiln output is expected to be 300 cu. yds. per day in sizes from 1 in. downward. Otto C. Frei, vice-president of the company, will have charge of the new plant.

Concrete Pipe Industry's First 107 Years Documented

A 12-page, two-color booklet entitled *Concrete Pipe Then & Now*, covering a span of 107 years, has been produced and will be distributed by the Universal Concrete Pipe Co., Columbus, O.

Documentary material obtained from the Warshaw Collection of Business Americana, New York City, was used to illustrate the booklet.

Reproduction of early booklets, invoices, price lists, tests, advertisements and testimonials highlight the historical resume.

The booklet points out that the first concrete pipe sewer line was installed in this country at Mohawk, N. Y., in 1842. The text points out, too, that:

"In recent years installations of concrete pipe have out-stripped those of all other kinds — combined! Time-tested, this pipe has proven its durability, its capacity for carrying specified loads and withstanding impacts.

"Concrete pipe has resisted the inflationary trend of construction materials' prices. Records prove it costs no more to buy today than it did 60 years ago."

The text closes with three testimonial letters written in 1866 and 1869 by city officials, engineers and water works superintendents.

Then and Now was prepared under the supervision of J. M. Millious, Universal's advertising and sales promotion manager.

Texas C.M. Assn. Names Chase and Leake Directors

John S. Chase was recently elected a director of the Texas Concrete Masonry Association at Austin. Mr. Chase is president of the Chase Building Products Company of Dallas and Fort Worth.

Also named to the board of the association, to fill a vacancy, was Charles Leake, general manager of the Universal Concrete Products Company of San Antonio. John P. Sheehan, president of the Atlas Lime Company of El Paso, is president of T.C.M.A.

Warren Hunt has been named office manager of the Universal Concrete Pipe Company's main southern branch at Atlanta, Ga., it was announced by President H. X. Eschenbrenner.

N.R.M.C.A. Announces Kuert Concrete, Modahl Safety Contest Winners

Winners of the National Ready Mixed Concrete Association safety contest ending July 1, 1949, have been announced by Vincent P. Ahearn, executive secretary.

For the larger-plant class the winner is Kuert Concrete, Inc., 3113 Lincoln Way West, South Bend 19, Ind. In the small-plant class Modahl and Scott, Inc., Bloomington, Ill., scored first place.

Kuert Concrete produced 86,311 cu. yds. of concrete during the contest period, working 34,754 man-hours. There were no lost-time injuries and no injuries to persons not employees of the firm. Only one instance of property damage was reported.

At the Modahl & Scott plant 33,507 cu. yds. of concrete were produced; the number of man-hours worked was 24,560. There were no injuries to personnel or others; and no property damage was recorded. Both companies will receive trophies furnished by PIT AND QUARRY. The presentations will be made in January at the annual N.R.M.C.A. convention in Chicago.

Besser Acquires Building For Distributing Point

The Besser Manufacturing Company, Alpena, Mich., producer of concrete block machinery, has purchased a two-story building at 116 Michigan Ave., Buffalo, N. Y., which will serve as Besser's distribution headquarters for the eastern section of the United States.

Besser will establish in Buffalo a complete parts and service department, serving the area northeast of Boston and New York and as far south as Philadelphia, Washington and Pittsburgh.

Carmi R.M.C. Moves Plant To Grayville, Ill., Location

H. B. Brooks and E. M. Alldredge, owners and operators of the Carmi Ready-Mix Concrete Company of Carmi, Ill., have announced that they will inaugurate a ready-mix service in Grayville, Ill., on a full-time basis.

The firm's equipment was moved to Grayville in August for a city job. Later it was decided to establish a permanent plant at the Eastwood Sand and Gravel Company's yards when the volume of work of the area appeared sufficient to justify the move.

Minnesota Concrete Firm Suffers $20,000 Fire Loss

A fire of undetermined origin recently caused damage estimated at $20,000 to the facilities of the Waseca Concrete Company at Waseca, Minn.

In addition to damage to the building, the company suffered the loss of two mixers and 1700 sacks of cement, as well as miscellaneous items of equipment.

Me and Vinz had been watching our motors pretty close and we tried to keep plenty of oil in 'em all the time. We had studied all we could about the rated output and overloads—you know, all the things the light-and-power boys talk to you about. But careful as we were, one day one of our 15-hp. 220's got too hot, and when we got to it, it was afire inside. I ran for the master switch in the boiler room and he cut the starter at the motor. When I got back, he was just taking a water hose away from one of the well-meaning boys. That guy was gonna squirt water on that hot motor! Could have been no worse than watering the lawn. But what if we hadn't got there first and the juice had been on? Then what would have been the story? Probably just a lot of fireworks, but that water sure is a good conductor and that guy sure might have got a good charge of that 220. Well, anyhow Vinz threw an old tarp over it; and some of the boys threw sand on it first. Funny what a bunch of guys will do when a situation that is unusual comes up.

We were out of a motor and in a mess of a fix. I called the electric motor man to come out and get it, which he did. I was surprised to see him unload another motor for us to use. We only lost three hours' production. That fellow sure gives good service.

Vinz got busy and bought us some gas-type fire extinguishers and put 'em around in different places over the plant, just in case we ever had any other fires.

I called our insurance man and told him all about how it was. Well, he was sure sorry and all that, but our insurance didn't cover a fire in a motor. That was news to me. I had felt pretty smug all along because I knew our insurance was in force and that we would get the loss paid for. It seems that a fire insurance policy don't cover any loss caused by the very nature of a piece of equipment that generates its own fire within itself, or something like that. He said if the fire had of come from out of the motor, say like a framework, housing or the building, fine! The policy pays! But if the darn thing just gets too hot and fires itself, that don't count. *We* paid for the loss.

That insurance man could have kept himself much higher on my totem pole if he had told me a few of those things to begin with. I'd have kept the policy, because as he pointed out when I got mad at him, they are all alike. Some of those fellows are so scared they won't make a sale that they don't tell you just what you are buying in that poke they deliver.

Well, if you think we didn't get busy and dig into our insurance, you are sure wrong, because we did. What we found is a long story, and I'll tell it to you sometime. When I told Vinz about it, he sure was mad; but just like he said, "We're sure a couple of beginners. Guess we're not supposed to be smart."

Seattle Firm Operates Plant At Big Sewage Project Site

On the site of a $1,000,000 sewage disposal project for the city of Salem, Ore., the Seattle Concrete Pipe Company is operating a pipe plant designed by Salem's City Engineer J. H. Davis and his staff.

Under the supervision of Henry Pratt, foreman, a 12-man crew is turning out 15 lengths of 6- by 6-ft. steel-reinforced concrete pipe per day. Pipe of other diameters is still to be made—about 1450 lengths. Despite a shutdown last summer because of a teamsters' strike, 400 lengths were turned out between May and August. Mr. Davis estimates that completion of pipe production for the project should be reached by next spring. The entire pipe operation will cost approximately $115,000.

R.M.C. Firm Speeds Replacing Of Truck Mixer and Bridge

According to word recently received from the Campanella & Cardi Ready Mixed Concrete Company, Hillsgrove, R. I., the company's truck which was wrecked in the accident described on page 166 of our September issue "was replaced with another new mixer within ten days, enabling us to maintain our slogan of 'Prompt, Courteous, Reliable' service and quality." Concerning the firm's truck fleet, the letter continues: "We have the largest fleet of trucks, all of which are not more than three years old, in the State of Rhode Island."

Speed and efficiency are also apparent in the matter of restoring the bridge that bowed to the truck. "As for the rebuilding of the collapsed bridge," states the letter, "Campanella & Cardi Construction Company was low bidder. The bridge is now under construction and will be completed before your next edition of PIT AND QUARRY."

Visitor from Bombay Tells of Building Boom In India and Pakistan

On tour in the United States to study American construction methods, M. H. Engineer, promotion director of the Cement Marketing Company of India, recently gave the press an interesting picture of the building industry in India. Mr. Engineer was at the time visiting plants and construction sites in southern Florida and the Keys area, accompanied by Neil Jones, sales representative for the Florida Division of the General Portland Cement Company.

Mr. Engineer stated that builders in India are keeping in close touch with American trends and techniques, and that ultra-modern methods and aid from American technicians are speeding the progress of building in that country.

On his visit to Boulder Dam, Mr. Engineer photographed the vast project in colors. He will publish the pictures in his magazine *The Indian Concrete Journal.* He exhibited photo displays of modern Indian concrete structures—homes, apartment houses, dairies, other farm buildings, government and office buildings and skyscraper hotels. He declared that the same interest in modern building, as well as in a program of roads, irrigation and power dams, has been evinced in Pakistan, which until nationalization was united to India territorially.

The Indian visitor stated that India's first cement factory was built in 1904 and that during World War I production increased rapidly. The Cement Marketing Company operates 15 plants, which produce 2,000,000 tons annually—about 50 to 60 percent of all the cement made in India. His prediction is that in another five years the manufacturing capacity of his concern will be increased by 50 percent. According to Mr. Engineer, block-making equipment in India is American-made.

It was announced at Sullivan, Ind., that the Sullivan Cinder Block and Cement Products Company had signed an agreement recognizing the United Construction Workers, U.M.W. of A., District 50, as the collective bargaining agent for its employees. K. H. Bergin signed for the company.

• A part of the Campanella & Cardi truck fleet.

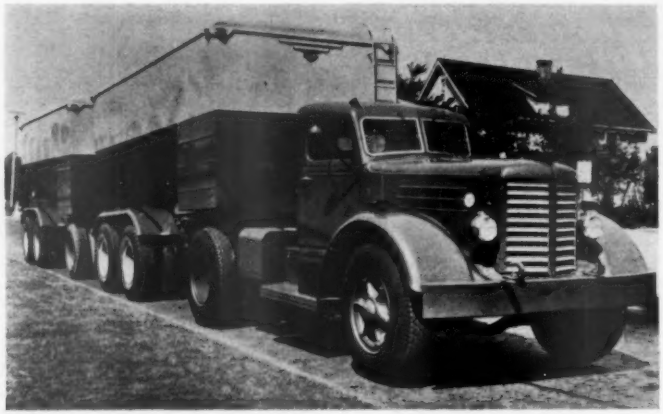
"Our Engineer's Tallest, Maintenance Smallest"—Boasts California Concern

A recent communication from the American Transit Mix Co., Inc., of Modesto, Calif., reports unusually low truck maintenance costs in 1948 and boasts of employing the tallest ready-mixed concrete plant engineer in the United States. L. L. "Slim" Jones, 6 ft. 8½ in. tall, has been with the company since April, 1947. If he is not the tallest ready-mixed concrete plant engineer in the country, he'll do until we see or hear of a taller one.

American Transit Mix started operations in March, 1947. Initial equipment consisted of a Noble plant, a 300-bbl. cement silo; 60-cu. yd. aggregate bunkers, and a 2½-cu. yd. weigh batcher. In September, 1947, a second 350-bbl. Noble conical silo was erected and the bunker capacity was increased to 80 cu. yds.

• L. L. "Slim" Jones, 6 ft. 8½ engineer and Dorothy Pierce, bookkeeper, 5 ft. 4 in.

The original fleet consisted of seven second-hand transit mix trucks. Aggregates were trucked in on a contract basis from Riverbank, 11 miles from the plant. Maintenance costs were so high on the old trucks that the company junked them and in 1948 purchased four new 702-A dual drive Diamond T's with 4½-cu. yd. Rex mixers and a 12-cu. yd. model 614 Diamond semi-dump truck. Parts costs for the first year of operation with the new units was only $3.20—for a new starter plug.



• Bulk cement transport calls for special, heavy-duty equipment such as this double bottom rig hauled by a 200-hp. Federal 65M2 tractor. This unit is one of four operated by Continental Transportation Company of Cleveland on the Painesville to Cleveland run.

Big Concrete Joist Order Filled by Kentucky Firm

At Shelbyville, Ky., what is described as "probably the largest order ever placed in Kentucky for reinforced concrete joists" is being filled by the Long Silo & Block Company of that city.

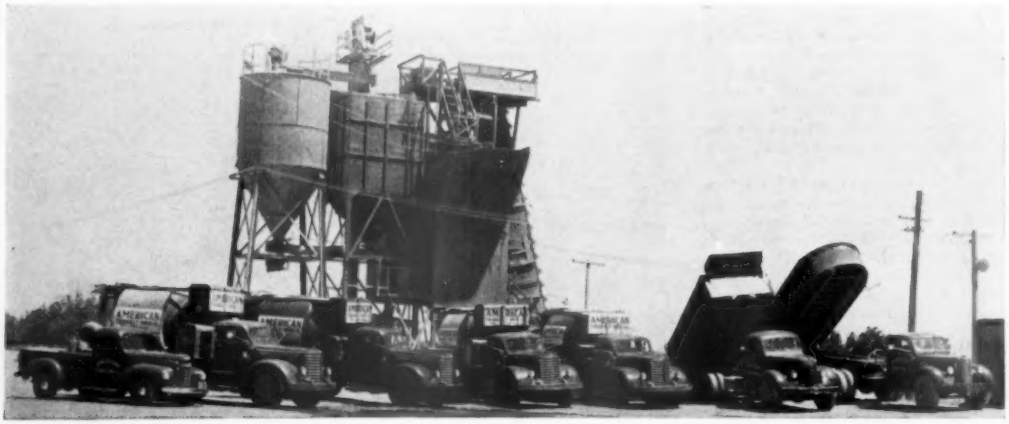
The order calls for 2½ miles of the steel-reinforced, fireproof joists, which weigh from 200 to 700 lbs. apiece. The units will be used in the construction of floors and roof of a new elementary school building at Bowling Green, Ky.

Sand-Gravel Firm Enters Ready-Mixed Concrete Field

The newly-installed equipment at the Martin Sand & Gravel Company's plant near Centralia, Wash., is now turning out ready-mixed concrete. Materials are produced at the firm's plant on Waunch Prairie and transported to all-steel bunkers near Chehalis, Wash., where it is loaded into transit-mix trucks.

The original plant, which produces washed sand, gravel and crushed rock, was purchased in 1946 by Lawrence G. Martin and his son Donald A. Martin.

Concrete Masonry in Church Construction, the first in a series of promotional aids emphasizing the use of concrete masonry units in the construction of specific types of buildings, was recently issued by the National Concrete Masonry Association. The next publication, now in preparation, will be devoted to the use of concrete masonry in school construction.



• Plant of American Transit Mix, Inc., Modesto, Calif., and the firm's fleet of transit mix trucks.

Western Concrete Firms Open New Plants— One Feeds Its Guests

Reports of new concrete and concrete products plants recently opened include announcements of several firms located in the West Coast states.

At Spokane, Wash., the Acme Sand and Gravel Company recently completed the erection of its $50,000 concrete batching plant, which is now ready for production. Owned by F. H. Drollinger, the business became a Spokane industry in 1924. A fleet of 12 trucks will be kept busy delivering concrete throughout the Spokane area.

A new concrete batching plant was built near Hood River, Ore., this year. Owner Sam Ledbetter has installed scales for weighing out the ingredients of the premixed concrete at his $20,000 facilities. Consumers all over the state of Oregon and beyond will be served by Ledbetter trucks.

North of Gilroy, Calif., the Las Animas Concrete and Supply Company opened its plant some weeks ago by giving a buffet dinner at which many prominent industrialists and state officials were honored guests. The $50,000 plant, owned by William Radtke and family, has steel bunkers with a capacity of 300 tons of material—approximately six carloads. Output is geared to 150 cu. yards of concrete daily. A railroad spur which will accommodate nine cars has been laid to the plant. The facilities also include an office building and a testing laboratory.

• Another California producer, Henry J. Adams of Arcadia, has begun delivering ready-mix at his plant at Baldwin Park, Calif. Mr. Adams will specialize in serving home-owners who wish to do their own improvement work.

Modern Equipment Speeds Completion of Aspen Tunnel

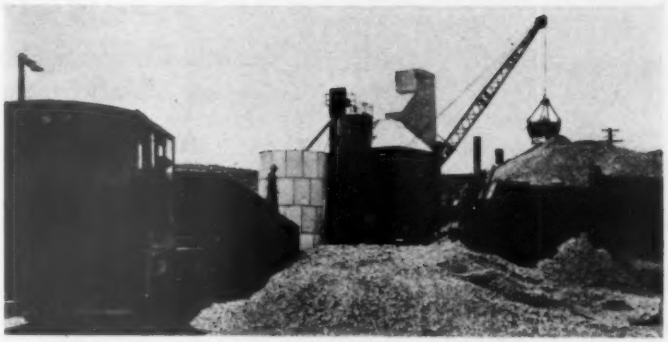
After two years of drilling, blasting and mucking, concrete operations are underway in the boring of the new 6,700-foot Aspen tunnel for the Union Pacific Railroad in western Wyoming.

The new bore parallels the single-track 5,941-ft. old Aspen tunnel which was completed in 1901. It is the only stretch of single track along Union Pacific's 1,026-mile double track main line between Omaha and Salt Lake City.

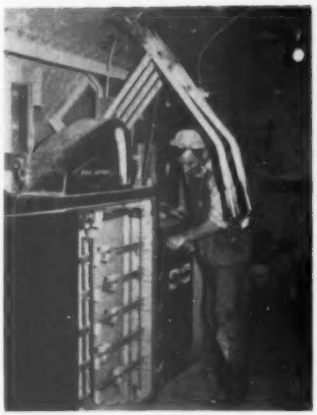
Aside from the narrow-gauge railway system and several jumbos which have been employed in all phases of the $8,000,000 project, four major types of equipment figure in the concreting: (1) a Noble batching plant, (2) a rail-mounted concrete mixer, (3) a rail-mounted Rex "Pumpcrete" and (4) two rail-mounted forms.

The batcher turns out one-cu. yd. dry batches totaling 3,892 lbs., each batch containing the following components (by pounds): cement, 540; sand, 1,283; pea gravel, 712; coarse gravel, 1,357. In addition, each batch contains 2⅞ lbs. of Pozzolith.

It is anticipated that the lining of the tunnel will require 60,000 cu. yds. of concrete to blanket the 5,000 tons of steel reinforcing. Three hundred and thirty men are currently working on the tunnel, which passes through a 7,660-ft. mountain at a level of 7,200 ft.



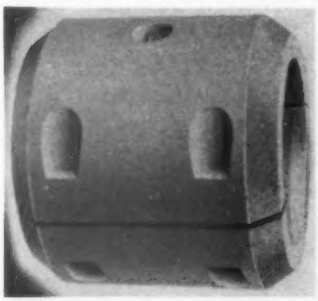
• Surge piles near the Aspen Tunnel. They are fed by underground conveyor belts to the batching plant.



• Operator at batching plant at the controls of the Pozzolith dispenser.

Universal Concrete Pipe Making Concrete River Weight

A concrete river weight that is easy to handle and economical to install, yet reportedly does an efficient job of weighing down under-water pipe, has been perfected by the Universal Concrete Pipe Co., Columbus, O.



• Special two-section river weights for underwater pipe.

The new weights are of rounded construction, which makes for quick and easy handling because they allow the pipe to roll or twist while being laid. Handling is further facilitated because the weights are in two sections, which are bolted together after encircling the pipe. A special lifting hole is a convenient feature.

Universal river weights are available for most sizes of pipes. Fifteen strategically-located plants insure quick deliveries.

R. I. Concern Goes Hollywood To Advertise in Home Show

At a home builders' show at Hillsgrove, R. I., on September 12-18 the Campanella & Cardi Ready Mixed Concrete Company featured the "Ready Mixed Theatre" at its display booth. On the conspicuous marquee appeared as the title of the attraction, "Now Pouring, Campanella & Cardi."

The 30-minute color motion picture, shown continuously, presented the story of the firm's preparation of ready-mix, beginning with the washing and screening of aggregate at its gravel bank and ending with the arrival of trucks at one of the big jobs.

During the home show the firm also ran a 35-minute color sound movie entitled "The Drama of Cement."

New equipment recently acquired by the Stephens Ready-Mix Concrete Company, Cairo, Ill., includes two mixer trucks, each of 3-cu. yd. capacity. The big trucks are 7-ton Chevrolets (16 tons loaded), equipped with Thornton drives. Thomas Burns, is plant superintendent.

S. J. Wick & Sons, concrete block manufacturer, is now located in Wagoner, Okla. The company, which employs from 10 to 15 persons, moved from Pryor, Okla., to its Wagoner location in March. Construction of the new plant was begun soon after securing the site.

• R. F. Leftwich, consulting engineer, Greenwich, Conn., who developed the sintering machine for producing Aglite.

• A. F. Christy, president of the Marietta Concrete Corporation, and his two sons, R. Neil Christy, plant engineer, and Leonard Christy, sales manager.

First Aglite Plant

Marietta Concrete Completes $250,000 Plant for Making Lightweight Aggregate

another ON THE SPOT report

THE first commercial plant for the production of Aglite, a new light-weight concrete aggregate made by sintering a mixture of finely crushed clay or shale and coal, was placed in operation several weeks ago by the Marietta Concrete Corporation of Marietta, Ohio. Built by Marietta at a cost of $250,000, the new plant is expected to produce at the rate of 25 to 30 cu. yds. per hour. The lightweight end product, which will be marketed under the trade name "Aglite," which is a registered trade mark, closely resembles haydite in appearance and structural properties, but it is believed that production costs will run approximately 50 percent less. One of the several features of the process which promise to make it an important factor in the lightweight aggregate field is that it is equally effective and economical for either continuous or intermittent operations.

By WILLIAM M. AVERY

The outstanding feature of the Aglite process is the Leftwich sintering machine, developed by R. F. Leftwich, consulting engineer of Greenwich, Conn., and built and supplied by the Besser Manufacturing Company of Alpena, Mich. It consists of a series of sintering pans, carried between two strands of roller chain which pass over sprockets at the ends of the machine to form a continuous, straight-line traveling grate. The individual pans which carry the sinter charge are 15 in. wide, 5 ft. long and 8 in. deep, and the length of the machine from center-to-center of sprockets is 54 ft. A more detailed description will be given later in this discussion.

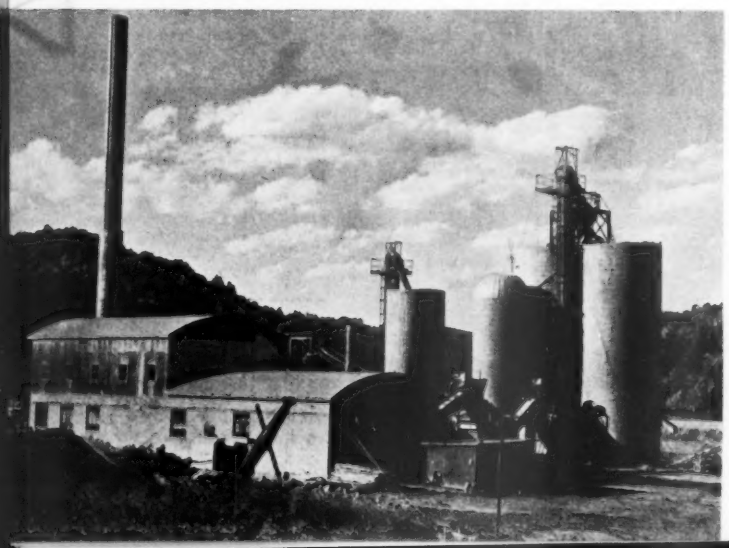
The raw clay used in the Marietta installation is excavated from deposits adjacent to the sintering plant. Vegetation is scraped off before the shovel moves in, but most of the overburden is fed to the plant and processed along with the clay. There are some 45 acres of usable material out of a total of 90 acres owned by the company. Various sections of the deposit have been core drilled, and clay has been found at depths of 40 ft. or more, indicating raw material reserves adequate for many years without excessive hauling.

Using a ¾-cu. yd. Lorain shovel for loading, and a single end-dump truck for hauling, about 400 cu. yds. of clay can be fed to the plant in an 8-hr. day. This is sufficient raw material to make about 600 cu. yds. of Aglite. The clay is dumped on the ground in front of a 3-cu. yd. hopper which is fed from the pile by means of either a bulldozer or a tractor with a front-end loader. An apron feeder under the hopper moves the material onto a 24-in. inclined apron conveyor which discharges into a 36- by 24-in. Jeffrey Mud Hog swing hammer crusher.

At this primary raw crusher return fines, consisting of minus ⅜-in. Aglite taken from the primary crusher at the finishing end of the process, are added to the raw feed. The fines are stored briefly in an adjacent 12- by 20-ft. Marietta concrete stave silo, and are fed to the Mud Hog simultaneously with the clay by means of an 18- by 36-in. vibrating pan feeder and an 18-in. belt conveyor. They serve to bulk the charge for better air flow during the actual sintering process.

The mixture of clay and fine Aglite is conveyed from the crusher to a 4- by 7-ft. Jeffrey Conveyan

• Below: A general view of Marietta Concrete Corporation's new Aglite plant at Marietta, O. This $250,000 installation is producing lightweight (expanded clay) aggregate at the rate of 25 to 30 cu. yds. per hour. Storage silos and stack were built with Marietta's own concrete staves.



scalping screen which takes out the small amount of plus ⅜-in. lump material present. Below this screen, on a 24-in. by 55-ft. belt conveyor which feeds the plant proper, the second blending process takes place, consisting of the addition of about 10 percent by weight of pulverized coal.

The coal handling set-up at Marietta consists of a ground level hopper from which 8-in. lump strip coal is conveyed to a 24- by 20-in. Jeffrey swing-hammer pulverizer. The pulverized fuel is then elevated and stored in a 16- by 45-ft. Marietta silo. It is fed from the silo at a controlled rate by means of a 12- by 30-in. vibrating pan feeder located just over the tail pulley of the 24-in. conveyor which feeds the sintering plant.

The final stage in the preparation of the sinter charge consists of thoroughly mixing the blend of raw clay, fine Aglite and pulverized coal. This is done in a 14-ft. Patterson double-shaft pug mill mixer located on a mezzanine floor over the charging end of the sintering machine. Sufficient water is added at the pug mill to bulk the mixture and bring it to a consistency suitable for sintering. The mixed material is discharged from the mill into a hopper directly over the sintering machine.

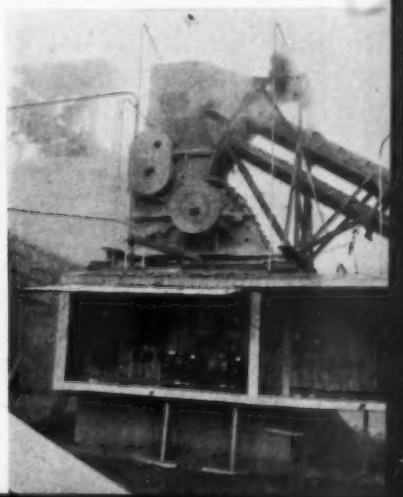
To protect the grates from the high temperature reached during the sintering process, a 1-in. layer of bedding material is rolled onto the moving pans just before the sinter charge is applied. This bedding material is partially burned Aglite screened out at the primary crusher and conveyed to a hopper located over the tail shaft of the sintering machine and just behind the sinter charge hopper. It is in the size range of minus ⅝-in. plus ⅜-in. The sinter charge is distributed uniformly over the bedding charge to a total depth of 9 in.

• Raw clay is dug from deposits adjacent to the plant with a ¾-cu. yd. shovel and trucked to the feed hopper.

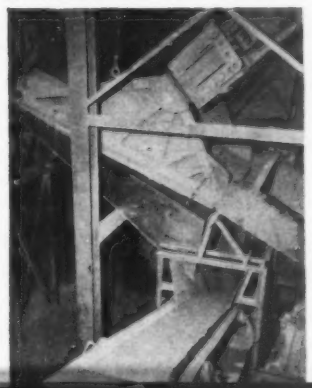
The sintering pans travel at speeds which are variable from 4 to 10 f.p.m. The loaded pans immediately pass under a 6-ft. by 5-ft. ignition hood which is lined with fire brick. Here the pulverized coal in the mixture is ignited by four gas burners, arranged two on each side of the ignition hood.

The ignited charge passes from under the hood, traveling over a series of wind boxes located under the machine. These boxes are connected through valves to a manifold which in turn is connected to the inlet side of a Lamson fan driven by a 350-hp. Crocker-Wheeler motor. By this means approximately 25,000 cu. ft. of air per minute is drawn downward through the ignited charge as it travels the length of the sintering machine. The burning progresses downward until the entire charge is fused into a solid cake or clinker. As the clay particles reach fusion temperature (from 2200 to 2300 deg. F.) gases are released internally, and as these are partially restrained by the viscous character of the particle surfaces, the material expands into a definitely cellular structure. The products of combustion pass through the wind boxes and the manifold into a Buell dust collector, and are then discharged through the fan into a

• An apron feeder under a 3-cu. yd. hopper moves the materials onto the 24-in. inclined apron conveyor at the right.
• Below: As the first stage in preparing the clay for sintering, it passes through this 36- by 24- in. swing hammer pulverizer.



• Below, left: A small amount of lump material is screened from the pulverized clay on this screen, and the throughs are blended with about 10 percent pulverized coal onto a belt conveyor which discharges into the sintering machine hopper.
• Below, right: A view of the hot material belt conveyor which feeds bedding material into a special hopper at the rear of the sintering machine. The material is minus ⅝-in. plus ⅜-in. partially-burned Aglite screened out at the primary roll crusher.



52-in. I.D. by 115-ft. high concrete stave stack.

The sinter cake drops from the pans at the discharge end of the machine onto a 36-in. inclined apron conveyor which feeds a 30-in. by 36-in. Jeffrey double-roll crusher located outside the building. There it is crushed to approximately 4 in. and discharged onto a Simplicity foundry type vibrating screen with ⅝-in. openings. It is at this point that the minus ⅝-in. material is screened out and re-fed into the process as return fines and bedding material. It is estimated that the circulating load is approximately 25 percent of the total, and that there is relatively little replacement of this material once the process is under way. For conveying this hot material (around 400 deg. F.) a 4-ply, 32-oz. Balata duck belt with a 2-ply asbestos cover is used. At all other points throughout the plant hot materials are handled on apron conveyors.

The plus ⅝-in. material drops from the screen onto a 36-in. apron conveyor, where it is cooled and then discharged onto a secondary double-roll crusher. After this final crushing operation the finished Aglite is elevated some 70 ft. and discharged over a double-deck vibrating screen. The three sizes (plus ⅜-in., minus ⅜-in. plus ⅛-in., and minus ⅛-in.) are stored separately in 20- by 55-ft. concrete stave silos located under the screen. The bin for plus ⅜-in. Aglite is so located that material can be discharged from it onto the secondary roll crusher and reduced to the smaller sizes.

At present the finished material must be trucked several hundred yards to a temporary siding, where it is loaded into cars for shipment, but a new siding will soon be completed which will make it possible to load cars directly from the storage silos. Truck loading for Marietta's own concrete block and stave plant and for local customers will also be handled directly from the silos.

With a total of 1000 cu. yds. of bin storage capacity for finished materials the company does not anticipate having to stockpile any sized product, but a relatively small stock of 4-in. material may be built up between the primary and secondary crushers. Similarly there will be no major stockpile of raw clay, since the nature of the deposit is such that recovery operations can be carried on without regard to weather conditions. It is planned, however, to roof over the area around the feed hopper as protection for the material that will accumulate there during the daylight operations of the shovel.

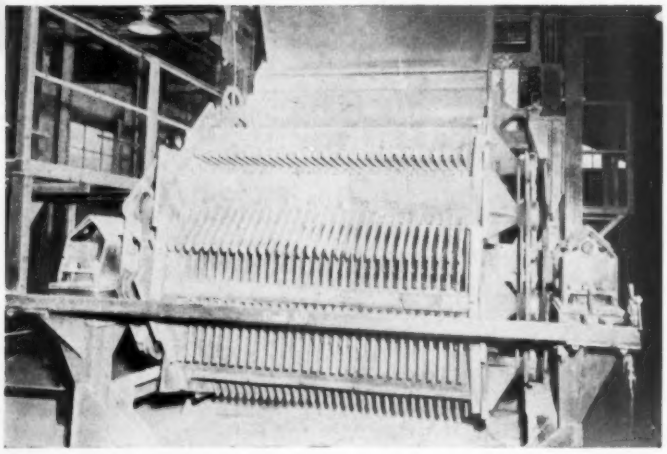
Two sizes of Aglite are being produced—a course product (minus ⅜-in. plus ⅛-in.) which has a loose weight of 1100 lbs. per cu. yd., and minus ⅛-in. fines with a loose weight of approximately 1400 lbs. per cu. yd. These two sizes are combined 50/50 at the mixer in block plants in order to assist segregation and assure uniform texture of block. Early tests of the material in Marietta's own concrete masonry unit plant, using a Besser Super Vibrapac for molding, showed 3-day compressive strengths of over 1300 p.s.i. These units were steam cured over night, and were made with an Aglite concrete mix which ran 18 to 20 blocks per sack of cement. Later tests, using leaner mixes of 24 to 26 blocks per sack, showed compressive strengths ranging from 1000 to 1100 p.s.i. in seven days. A standard 48- by 8- by 16-in. Aglite block weighs 27 to 28 lbs.

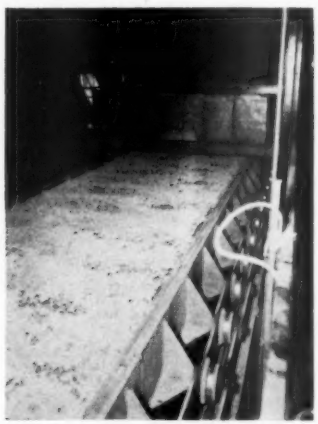
Marietta plans to consume approximately 50 percent of its Aglite production in its own silo stave and concrete masonry unit plant located several hundred yards from the new sintering plant. The block and stave plant is one of the most modern and efficient in the country, producing 5000 masonry units and 6000 silo staves in an 8-hr. day*. The company has long been a large consumer of lightweight aggregate

*See Avery, William M.: *Modern Plant Increases Production, Cuts Labor Cost for Marietta Concrete*, Pit and Quarry, September, 1947, page 157.

• Left: The 14-ft. double-shaft pug mill in which all materials are thoroughly mixed with enough water to obtain the consistency desired for sintering.

• Below: Rear view of the Leftwich sintering machine. Bedding material is rolled into the grates to a depth of 1 in. from the hopper above.





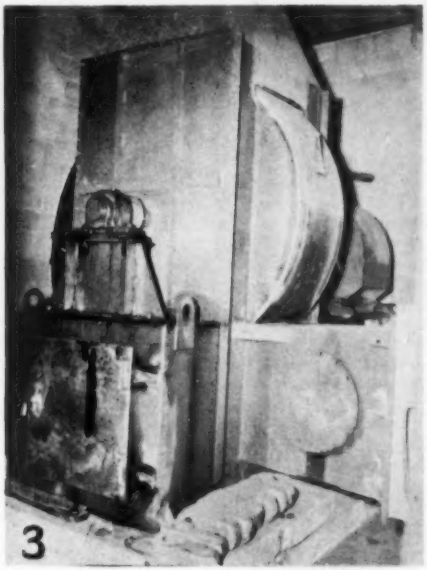
• The coal in the charge is ignited as it passes under the hood visible in the background of this view of the sintering machine. Combustion progresses downward through the charge as it travels over a series of wind boxes connected to the inlet side of a fan.

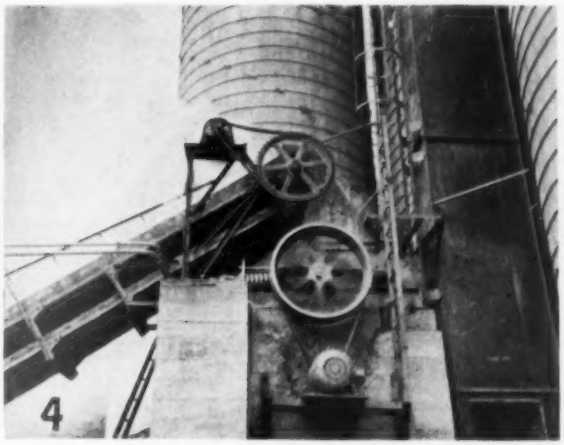
in block production, and more recently in producing its Air-Cell concrete silo staves used in grain storage bins and other structures in which insulation is desirable. The material formerly used was shipped in by rail at a cost of $2.58 per ton in freight alone.

Aglite production in excess of the company's own requirements will be sold to concrete products plants and other users in the Marietta area. Within practicable shipping distance are the cities of Charleston, Clarksburg, Wheeling and Huntington, all in West Virginia, and Portsmouth, Ironton, Chillicothe, Janesville, and Columbus in Ohio. It is not planned to blend the two sizes of material for shipment unless users insist upon it, since a certain amount of segregation would take place during long hauls.

Since the Marietta plant has only just gotten into its production stride, there has to date been no opportunity to accumulate significant performance figures and cost data. However, certain broad conclusions in regard to the process itself are suggested by even a cursory inspection of the plant. On the economy side it has several advantages over other processes we have seen. The basic raw material is widely available, and easily and cheaply recovered without costly and often hazardous stripping, drilling and blast-

(*Continued on page* 191)





1. Products of combustion are drawn through this dust collector before being discharged to the stack.

2. The hot clinker is discharged from an apron conveyor into a 30- by 36-in. double-roll crusher, and then passes over a tube-type vibrating screen to remove the minus ⅝-in. material used as bedding and return fines. Note the water sprays on the pan conveyor at the right.

3. A view of the 350-hp. fan which draws approximately 25,000 cu. ft. of air per minute through the wind boxes under the sintering machine.

4. Plus ⅝-in. Aglite is recrushed in this secondary double-roll crusher, then elevated, screened and discharged into concrete stave silos.

N.R.M.C.A. Asheville Board Meeting Draws Record Attendance

By WALTER E. TRAUFFER

another ON THE SPOT report

THE semi-annual meeting of the board of directors of the National Ready-Mixed Concrete Association was held September 26-28, 1949, at the Grove Park Inn, Asheville, N. C. This was probably the best attended meeting ever held by this group, as only one of the 19 directors was absent. From the standpoint of the importance of the subjects discussed this was also an important occasion; and the surroundings, accommodations and food left nothing to be desired. The meeting was held simultaneously with that of the National Sand & Gravel Association's board, the first day being devoted to a meeting of the ready-mixed board, the second to the sand and gravel board and the third to a joint meeting where many important common problems and plans were discussed. Most of the directors brought their wives, for whom there was a wide variety of entertainment. The success of the meetings, which have been held in widely-known resorts, has practically established a policy; and the directors of both associations almost unanimously confirmed their previous decision that the 1950 meeting be held in September at the Sun Valley Lodge, Sun Valley, Idaho.

President Robert E. Porter (Harry T. Campbell Sons Corp., Towson, Md.) gave a brief resume of business conditions in the industry. He pointed out that the increased cost of cement—due in part at least to the cement decision—the higher freight rates, etc., have put ready-mixed concrete producers on the spot, as they must charge higher prices at a time when prices of most other commodities are going down. On the brighter side he told of a new method of publicizing concrete. It has been included as a subject in the Baltimore County high schools, and five men from the Campbell company are going to give a 12-week course which will cover its history, technology, uses, ready-mix production, handling, placing, etc. This course, Mr. Porter said, is to be for juniors and seniors, and he thinks all high schools in Maryland may eventually adopt such courses. He suggested that other producers try to institute such courses in their areas.

Vincent P. Ahearn, executive secretary, in his report to the board pointed out the excellent financial condition of the association and the fact that it continues to grow rapidly. It now has 450 active and associate members, 49 of them new since the first of the year. It is interesting to note that nine of the new members are from Florida. Mr. Ahearn also commented on some of the legislative developments in Washington which are of interest to the industry.

• A congenial and businesslike trio of officers, left to right: Norman J. Fredericks, secretary-treasurer (Koenig Coal & Supply Co., Detroit, Mich.); Robert F. Porter, president (Harry T. Campbell Sons' Corp., Towson, Md.); William Moore, vice-president (J. P. O'Connell Co., Boston, Mass.).

In reporting for the merchandising committee on a promotional campaign for ready-mixed concrete, Robert C. Collins (Warner Co., Philadelphia, Pa.), chairman of the committee, said that the Portland Cement Association has agreed to cooperate by providing a series of mats and mailing pieces which will be ready in time to be exhibited at the annual convention. A movie will also be made which will promote the use of ready-mixed concrete. At the convention the P.C.A.'s excellent color film, *The Drama of Portland Cement*, will be shown and 12 radio scripts will be presented. Both the P.C.A. and The N.R.M.C.A. will have booths at the exhibit.

Arthur A. Levison, chairman of the Truck Mixer Manufacturers Bureau, made a brief statement for the Bureau in which he reviewed its formation in 1945. He also described the various standards which have been adopted, such as the ratios between drum and mixing and agitating capacities, speed of rotation, etc., which have eliminated many problems formerly confronting producers. Some mention was also made of the growing emphasis on weight restrictions. According to Mr. Ahearn the 18,000-lb. axle load restriction is here to stay.

Stanton Walker, research director, said that excellent progress has been made in moving into the new laboratory on the University of Maryland campus and that considerable additional new equipment has been ordered and is being installed. He also reported on the anonymous tests of concrete admixtures which have been of help to many members. The recent survey made on the handling of pre-tested materials showed that some producers have provisions for separate storage of pre-tested cement, but only a few have such provisions for aggregates. According to Mr. Walker work is continuing on combining the *Manual* and the booklet on *Controlling the Quality of Ready Mixed Concrete*.

With respect to the association's safety contest, for which trophies are awarded by PIT AND QUARRY, it was reported that participation was better than the year before, but that there is still considerable room for improvement. It was agreed that a committee should be appointed to find means of arousing greater interest in this contest.

At the joint meeting of the two boards on Wednesday, September 28, places and dates of future meetings were announced. The 1951 annual conventions will be held in New Orleans, La., February 11 to 15; the 1952 conventions, which will

(*Continued on page* 190)

Logical Tieup Between Block and Sand And Gravel Operations

By Edward Brunenkant

• A general view of the block plant operated by the Janesville Sand & Gravel Company near Janesville, Wis. Note the bridge built over the plant permitting trucks to unload aggregates and cement directly into plant storage bins.

another ON THE SPOT picture

THE concrete block plant operated by the Janesville Sand & Gravel Company, Janesville, Wis., represents a resounding verdict in favor of coupling aggregate production with the production of concrete masonry units. Although this block venture is modest in size when compared with some of the Goliaths in the masonry industry, its 8,500 8-in. equivalents per day still adds up to a healthy annual total. And highly important to the parent company, the block operation provides a steady outlet for its sand and gravel.

Because of intelligent foresight, adequate funds to execute the well-thought-out plans, and plenty of land to build on, this plant is truly a model of efficiently neat block production. In addition to the painstaking detail devoted to making the plant mechanically efficient, serious thought was given to making the plant convenient for the men who work there. Such a detail as a complete shower and locker room is an illustration in point.

Initial production facilities consisted of one Stearns Joltcrete block machine, a 42-cu. ft. mixer of the same make, and a 1000 sq. ft. of paved area. The plant was constructed from the first blocks produced following a plan drawn for the company by a well-known architect in Madison, Wis. Two years later, in 1949, a second Joltcrete was installed and the concrete pavement around the yard was extended to 60,000 sq. ft. It is interesting to note that despite increases in the price of cement and upward adjustments in the wages of the employees, the cost per block rose only 1.6 cents in the two year period from 1946 to 1948.

Bulk cement is hauled in a covered dump truck from a 600-bbl. Butler storage bin erected along the company's siding. It is unloaded directly into the block bins from a bridge running directly over the block plant. By taking advantage of the low elevation of the plant (it was built in a worked-out gravel pit), and the overhead bridge-ramp, all belts and elevators commonly used in other block plants for lifting cement and aggregates have been eliminated. During the winter months the aggregates are heated with steam, each Butler bin being equipped with heating coils.

The cement and aggregates are proportioned in a Butler traveling weigh-batcher which is positioned over the mixers by means of limit switches. Water is added at the mixer and the mud is discharged directly into the machine hopper.

• Oscar Jansen, plant foreman, and his assistant, Paul Fannery.

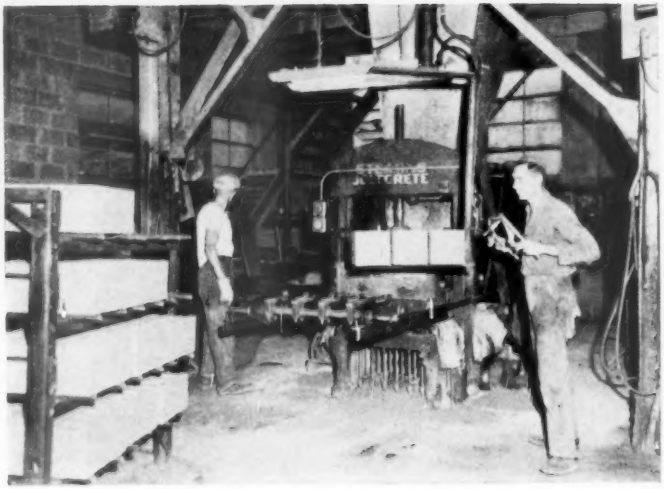
Steam is also sprayed over the mixers through fine holes punched in a pipe suspended laterally above the drum. This system is said to be very effective in holding down the dust normally generated during the charging period.

In addition to standard blocks, the company has recently introduced Waylite lightweight blocks to the Janesville area. A recommended mix designed for making these lightweight unit follows: 350 lbs. of cement, 666 lbs. of fine, and 312 lbs. of coarse Waylite aggregate. The fines are dumped into the mixer, along with one half of the mix water and agitated for one minute. Then the cement is added with one-fourth of the water and mixed for three minutes. Finally the coarse Waylite is introduced and the remaining one-fourth of the water, and the whole charge is mixed for 3 more minutes. Standard portland cement is used for all mixes, but 3 oz. of Darex is added to each lightweight batch.

Each of the two Stearns machines is rated at nine 8-in. equivalents per minute. The blocks are loaded into steel racks which will accommodate 72 8- by 8- by 16-in. blocks. They are moved into the curing rooms with the aid of Erickson pallet-lift trucks.

The plant boasts 5 curing rooms that will hold 22 loaded racks each.

(*Continued on page* 190)



• Top, left: Aggregates and cement are proportioned by means of this traveling weigh-batcher. It is positioned over the mixer by limit switches.

• Top, right: A pallet oiler designed by the plant foreman. The dirty pallets are hung from one pin and the oiled ones are taken from the top adjacent pin. As the pallets are hung on the pins, the center of gravity of the wheel shifts, causing the wheel to rotate.

• Above: Loaded racks are transferred from the block machine to the curing room with a pallet lift truck.

• Above, right: One of the two block machines used at this plant. Each machine has a rated capacity of nine 8-in. equivalents per minute.

• Right: Forty-eight-inch cubes are loaded onto a flat-bed truck with this fork lift truck.

Wisconsin Operator Installs New Type Plain Pallet Automatic Block Machine

another ON THE SPOT report

A CONCRETE block producer who apparently is not anxious to produce all the blocks in the world but does try to make the best ones most economically and efficiently

By WALTER E. TRAUFFER

is Fred Krumhaus, owner of the Krumhaus Block Company, on the outskirts of Waukesha, Wis. When his operations were last described in these pages (December, 1943, pp. 95-6), he was using a vibrator block machine which made three blocks at a time. With this and a total plant crew of six men an average of 3500 standard blocks were made in a 9-hour day. This machine has been replaced by a new Gocorp (Gene Olson Corporation) "Senior" block machine which went into operation June 20, 1949. This is rated at 720 standard blocks per hour, but when the plant visited in August was being operated at a speed of about 600 blocks per hour until greater mixer capacity is provided. A plant crew of five men is now employed to perform all operations from digging and processing the sand and gravel to delivering the finished blocks.

The old machine got 16 blocks from a bag of standard portland cement, and these had an average strength of over 1500 lbs. p.s.i., far above the 1000-lb. state requirement. With the new machine a sharply higher number of blocks are obtained per sack with no sacrifice of strength, and the blocks are smoother and denser. According to Mr. Krumhaus this machine is also quieter in spite of the intense mold vibration, and there is very little dropping or spilling of concrete.

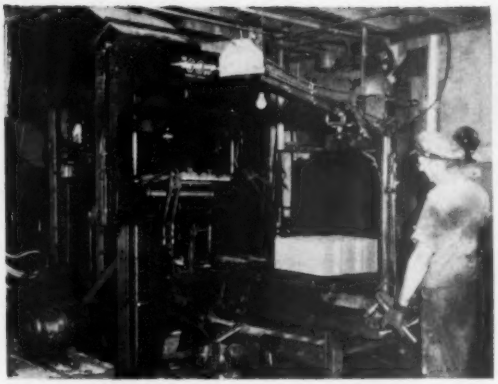
• A truck discharging a load of aggregates to the Krumhaus plant near Waukesha, Wis., for processing before elevating to the bins.

The Gocorp "Senior" is an entirely new design of plain pallet machine which is fully automatic and features integral pallet return equipment. The power is hydraulic, and full advantage is taken of the advantages of hydraulic control, such as ability to regulate the speed of each motion without affecting the others. The design permits the clamping of the plain pallet firmly to the mold, in a way that does not tend to dampen out the mold vibration. The "Senior" is also equipped with the latest devices for controlling density and height. The vibration is of a type which produces intense vertical amplitudes with a minimum power requirement and minimum abuse to the machine. The mix is fed direct from the supply hopper through an agitator into the mold box, dispensing entirely with feed drawer mechanisms. This arrangement is said to insure quick and positive mold box filling, eliminating uneven feed from front to rear in the mold.

• The crawler crane with its ¾-cu. yd. clamshell bucket, which has replaced a smaller machine in the company's gravel pit.

The plant when last described was so efficient that little could be done to improve it. In the pit of his property, from which Mr. Krumhaus produces carefully crushed and sized sand and gravel primarily for his own needs, a Unit crawler crane with a ¾-cu. yd. clamshell bucket has replaced a smaller machine. A truck delivers the material to the plant, where it is crushed and screened down to ⅜-in. minus before it is elevated to the plant bins. A Butler elevator, bin and weigh batcher are used.

The concrete is discharged from the batcher into the 25-cu. ft. Besser mixer which serves the new machine and an old Stearns Clipper stripper



• The new automatic plain pallet vibrating block machine. Note the low head room required by the new type of magnetic offbearer.

• A closeup showing the magnetic offbearer dropping a pallet on the automatic return mechanism before picking up a load of blocks.

• Right: The control panel for operating the new block machine.

which is used for making specials. All standard sizes of blocks from 4- to 12-in. are made on the Gocorp "Senior".

The blocks come out of this machine three at a time and are removed six at a time with a Gocorp fork offbearer. It is notable that this offbearer design operates with lower head room than was heretofore possible. Operations are arranged so that after a load of blocks is deposited on a rack the magnetic offbearer picks up an empty six-block pallet off the rack and deposits it on the machine's pallet return conveyor with no lost motion or time.

A hand lift truck is now used to take the loaded racks to the steam curing rooms. An Automatic Transporter electric lift truck is used to yard the cured blocks and bring the empty racks back to the plant. Blocks are now being piled up 10 to 12 high, giving the yard a capacity of 140,000 standard blocks. A high-lift truck will be purchased soon, and the blocks will be cubed and stacked nearly twice as high, practically doubling the storage capacity.

A rather neat device at this plant is a gravity pallet oiler designed by Oscar Jensen, plant foreman. It consists of 6-ft.-diameter flat solid steel wheel, the bottom portion of which is immersed in a steel tub holding 100 gal. of drain oil. Seven pins are welded at regular intervals on the side of the wheel near its periphery. The dirty pallets are hung on the pins on one side and the clean pallets are taken off the adjacent top pin. As the pallets are removed the center of gravity of the wheel is shifted and the wheel revolves one pin, dragging the dirty pallets through the oil bath.

At regular intervals, the blocks are sent to the University of Wisconsin's laboratory for strength tests. Standard 8-in. sand-and-gravel units normally yield around 2500 p.s.i., while the 12-in. units normally give compressive strengths around 3100 p.s.i.

Paul Fannery is Oscar Jensen's assistant at the plant. Top personnel of the Janesville Sand & Gravel Co. include J. K. Jensen, president; J. R. Jensen, superintendent; and E. E. Jensen, treasurer.

N.R.M.C.A. Directors' Meeting

(*From page* 186)

include a machinery exhibit in cooperation with the National Crushed Stone Association, will be held at the Stevens Hotel, Chicago, either the week of February 25 or March 3, with the stone association taking the other week; the 1953 convention will be held the week of February 22 at the Fairmont Hotel, San Francisco.

At this joint meeting Mr. Walker outlined briefly some of the research work going on or planned. The durability of concrete remains the most important subject, and further studies are to be made of freezing and thawing. Air entrainment, the chemical reaction of aggregates, and thermal compatibility are also receiving attention. Mr. Walker said that the association again has a research fellow and, as the University is now again giving courses leading to degrees in civil engineering, he and his assistants are now giving concrete courses. He also announced the appointment of a joint research committee consisting of three members from each association and himself.

Mr. Ahearn gave a resume of recent developments in Washington. The changes being made in the Wage-Hour law, he said, will solve many present problems, and tighter enforcement of the anti-trust law is expected. A reduction in excise taxes he believes to be inevitable and, as no reduction in appropriations is expected, there will be a deficit unless other means are found for increasing taxes.

Logical Tieup

(*From page* 187)

In the summer, the green blocks are given a 24-hour natural cure, but in the cold months a steam cure is employed. Steam for curing, as well as for heating the aggregate bins, is supplied with a Kewanee low-pressure (15 lbs.) oil-fired boiler. Cured units are stacked, four cubes high, with Clark 2-ton fork lift trucks. The blocks are stacked in a 48-in. cube, (three wide, four deep, and four high) and cubes are crisscrossed for convenience in loading the trucks.

First Aglite Plant

(*From page* 185)

ing operations. The poorer grades of strip-mine coal which are normally wasted can be used for fuel with entire success. Manpower requirements in relation to productive capacity are quite low. Five men operate the entire plant at Marietta.

Because of the method used in sintering Aglite, continuous operations are not required. A point we noted particularly in our inspection of the plant was the ease with which operations were stopped and later resumed during the noon hour. The Marietta plant is now operating on a single-shift basis, a practice which would be economically impossible in a comparable rotary-kiln plant. When demand for the material necessitates it, production can be doubled or trebled by simply putting on additional shifts.

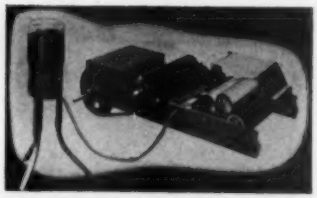
The process has the additional merit of being relatively independent of the chemical or physical composition of the raw clay used. So far Marietta has not even had an analysis made of the material in its deposits. To determine its suitability before construction work began, a small batch pilot plant was shipped to the site. Materials were mixed by hand and fired with natural gas to produce sinter cakes which were 18 in. wide by 2 ft. long by about 8 in. thick. In this fashion several cubic yards of Aglite was produced. This material was used to produce both masonry units and silo staves for testing purposes. Test results on the pilot plant material predicted with surprising accuracy the performance later obtained with material from the full-scale plant.

The various operations in this first commercial Aglite plant utilize about 30 motors, with a total of 625 hp. Power is supplied through an adjoining substation set up to provide 440-volt current. The Leftwich sintering machine, the pug mill, the Buell dust collector, and the fan are the only major items of equipment which are housed. They are located in a single concrete masonry building measuring 34 ft. by 100 ft. All the construction work was carried out by the Marietta Concrete Corp., with sub-contractors for the electrical work, and for welding and erecting the structural supports for conveyors and elevators. The process was developed by R. F. Leftwich, who designed the Aglite plant for Marietta.

NEW MACHINERY and SUPPLIES

● Pallet Oiler

The Bergen Machine & Tool Co. Inc., 189 Franklin Ave., Nutley, N. J., has developed a new pallet oiler which consists of one 8-in. by 26-in. steel brush for removing concrete, three hardwood rollers, a five-gallon oil bottle with standard reservoir, and a removable oil tank.

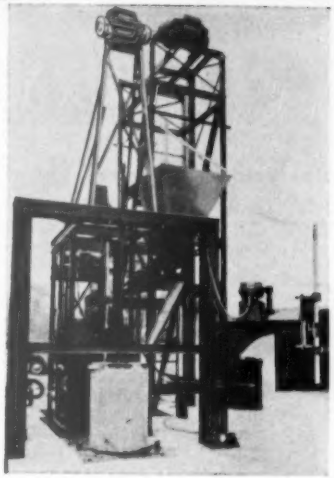


● New Type Concrete Roofing Tile

Because of the demand for corrugated (Mission, or Spanish) type roofing tile, the E. P. Barber Co., Bloomington, Calif., has recently introduced a new Bartile machine to produce this addition to its line. The illustration at the left shows how the new concrete tile is applied. It retains the original double tongue-and-groove feature used on the French, or flat, type of Bartile. Tests of Bartile roofing units, made recently in laboratories of Smith-Emery Co., Los Angeles, showed 48-hr. absorption averaged 5.44 percent, with transverse strengths averaging 697 lbs.—exceeding F.H.A. requirements in this regard. Illustrations of Bartile roofs on concrete masonry houses have been featured recently in Portland Cement Association consumer advertising.

CONTINENTAL MODEL T.I.C. 60

for ECONOMICAL PRODUCTION



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- Makes pipe sizes 6" through 60"

There's a profitable market in your locality for high quality concrete pipe moulded in a CONTINENTAL 60 Pipe Machine.

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Tough, long wearing HORSE HIDE

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Sample pair — $1.00 — Dozen pairs — $11.40.

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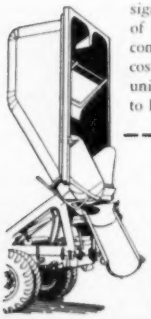
Ask about our complete line of leather, canvas and rubber coated gloves.

1 out of 4 Dumpcretes sold is a repeat order!

The best evidence of satisfaction with any product is repeat business . . . from those who *have learned first-hand* that it serves their needs well. Concrete producers from coast to coast have found that the Dumpcrete will deliver well designed and controlled mixes of top quality air-entrained concrete at substantially less cost per yard — perfectly uniform concrete from load to load without appreciable loss of slump or change in air content.

The Dumpcrete gives them all the placing advantages of high discharge agitating equipment with a lower capital investment . . . and less repair and operating expenses. It has reduced their overhead too, for the Dumpcrete can be kept busy most of the time with sand, gravel, coal, bulk cement, earth or mortar, as well as concrete.

Mail the coupon today for more information.



The lower cost Dumpcrete is lightweight, watertight, with 13-foot chute, controlled higher discharge and lower center of gravity. Hauls sand, gravel, and coal too. Available in 2, 3, and 4 yard sizes.

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DIVISION MAXON CONSTRUCTION CO., INC.

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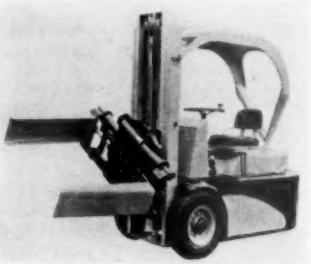
● Revolving Load-Grab

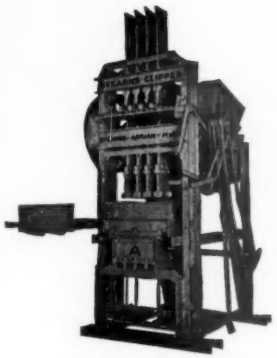
A "Load-Grab" unit can now be mounted on the revolving apron attachment of the Hyster 4,000-lb. capacity or "40" lift-truck.

Basically the Load-Grab is a hydraulically-controlled device which squeezes its load with sufficient side pressure to allow lifting without the need of a supporting pallet. With the Load-Grab



mounted on the revolving apron attachment instead of its regular pallet arms, a variety of combinations for lifting, turning and tiering many kinds of materials is made possible.

The revolving apron is designed to turn loads 190 degrees in one direction. Where the job requires the load to be revolving in both directions, the revolving apron can be set to rotate 95 degrees on either side of the center position.



The Clipper Stripper, shown above, available in 5 models, is only one of the popular machines in the ANCHOR Line of Complete Equipment for the Concrete Products Plant. ANCHOR Engineering Service in the design of new plants or revamping older operations is nationally famous. Consult us before you buy equipment or modernize your plant . . . it costs no more.

Stearns Clipper Stripper Machines; Stearns Jolterete Machines; Stearns Mixers; Cast Iron and Press Steel Pallets. Straublox Oscillating Attachments, etc. Repair parts for: Anchor, Stearns, Blystone Mixers and many others.

ANCHOR CONCRETE MACHINERY CO.

G. M. Friel, Manager Columbus, Ohio

The Gene Olsen Corporation, Adrian, Mich., offers its "Gocorp Junior" heavy-duty vibrator block machine for the smaller block plant. This one-man unit makes 3 to 4 cycles per minute, producing blocks of any dimensions falling within a 20-in. square. "Single" model makes one 8-in. block per cycle; "twin" makes two per cycle. The Junior has a hydraulic-automatic cycle and electric height control. Used or new cored pallets are employed. Other members of the Gocorp block machine line are the "King," producing 24 units per minute, and the "Senior," 12 per minute. The firm also manufacturers batch mixers, continuous mixers, testing machines, pipe and drain tile machines, and parts and attachments for Stearns equipment.

● Adjustable Ramp

The Barrett "Safety Ramp" pictured below is said to offer a tested solution for troublesome problems and hazards which cause excessive loading and unloading time, injuries to men, and damage to goods.

This staunch and portable ramp, with its adjustable height feature, provides a gradual incline in a matter of seconds, so that loading and unloading are done with ease, speed and safety. The safety ramp also furnishes a gradual incline from shipping dock or truck bed to street level, transfers loads from truck to truck or from freight car to truck, and bridges area-ways between buildings.

A mechanical screw-type lifting gear provides a 12-in. variation in height at one end of the ramp. A few turns of the crank will bring that end of the ramp up or down as required to line up and rest securely on the end of the truck or the dock. The wheels of the ramp may be retracted by cranking to clear the ground.

TOWMOTOR Electric Pallet Truck

selected by WRIGLEY

for speed . . . maneuverability . . . ruggedness

Producing millions of sticks of chewing gum *every day*—billions every year—necessitates the unloading, storing and transporting of a staggering amount of materials. This is the problem at the Wm. Wrigley Jr. Company's giant Chicago plant—the world's largest chewing gum factory.

To help maintain top efficiency in a competitive industry, Wrigley must be constantly alert to new developments in the materials handling field. That's why Wrigley selected Towmotor Electric Pallet Trucks to augment its handling equipment.

One of the gruelling tasks is to transport and store 2400-lb. pallet loads on an inclined floor. The floor is rough board surface at an 8° angle. Towmotor is the only truck with enough power to handle full loads rapidly over this area!

In actual operation, Towmotor travels *faster* under *heavier* loads . . . weighs less, carries more . . . climbs grades more readily . . . stands up under constant daily use.

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- Dual Finger-tip Control—either hand.
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- Rapid lifting of loads up to 4000 lbs.
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Write for the descriptive folder on Towmotor Electric Pallet Trucks. Learn how Towmotor **M**ass **H**andling methods can cut production costs and save money for you. Towmotor Corp., Division 13, 1226 East 152nd St., Cleveland 10, Ohio. Representatives in all Principal Cities in U. S. and Canada.

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FORK LIFT TRUCKS and TRACTORS

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● Electric Hammer Drill

A radically new type of Syntron electric hammer has just been put on the market—the first to hammer *and rotate* the drill bit at the same time.

This takes all of the hard work out of drilling concrete, masonry or rock by eliminating the quarter turning of the star drill wrench by hand to get a round hole. Syntron has also developed a brand new line of drill steels to use with these new hammers, with carbide cutting edges and spiral flutes that are much faster than standard steel drills, that make possible the drilling of the hardest rock, granite, etc., and that clean the cuttings out of the hole as the hammer rotates the drill steel.

The hammer will drill up to 2-in. diameter holes. It is of electro magnetic design with a free-striking piston, and has an automatic safety clutch on the rotating drive which will slip if the bit binds or gets stuck in its hole. The percussive hammering can be stopped while the bit continues to rotate to clean the hole. The device weighs 38½ lbs. and is identified as the Model 25-RO rotating electric hammer. It is available for either 110 or 220 volt a.-c. operation. The Syntron Company, 385 Carson Avenue, Homer City, Pa.

The Dow Chemical Company is now shipping Dowflake calcium chloride in a new and greatly improved bag. This widely used product demands a heavy-duty, moisture-proof package. The bag is Dow-produced, made exclusively for packaging Dow chemicals.

The new Dowflake bag is made from 55-lb. kraft paper, which is treated with a coating of asphalt adhesive to which a mesh of strong cord is added. The treated paper is then joined with another sheet of 55-lb. kraft paper and run through roll presses. This laminated sheet is then machined into a tube and the ends are sealed.

The bag's new label features Dowflake calcium chloride's byword, "The Ever Thirsty Chemical", on the front and directions on the reverse.

Merritt Mason has joined the Noble Co., Oakland, Calif., manufacturer of batching and concrete handling equipment, as engineer in charge of steel form design.

UNIT
½ and ¾ YARD EXCAVATORS
•
CRANES UP TO 15 TONS
Fully Convertible
UNIT BUILT FOR ALL-AROUND Heavy-Duty Service
UNIT is tough! UNIT is versatile! That's why you can use UNIT on any type of job requiring shovel, clamshell, magnet, dragline, trenchoe, grapple or backfiller. And it's easy to change from one attachment to the other, right on the job. UNIT gives you all the power and speed you need, plus these exclusive features: Automatic traction brakes . . . Disc-type clutches . . . Drop forged alloy steel gears...Splined shafts...One-piece cast gear case ...Straight-line engine mounting.
Mobile and Crawler Models Available
UNIT CRANE AND SHOVEL CORP.
6401 W. BURNHAM ST., MILWAUKEE 14, WIS., U. S. A.
FULL VISION CAB for GREATER SAFETY
UNIT
SHOVELS • DRAGLINES • CLAMSHELLS
CRANES • TRENCHOES • MAGNETS

DRY WALLS
Interior or Exterior
Above or Below Grade
Eliminate costly guess work in solving wet wall problems. Seal and beautify porous walls of concrete block, tile, stucco, etc., with Spray-O-Bond Concrete Sealer. It's easy to apply — almost like brushing on paint. Used successfully by contractors for over 20 years. A post card will bring you the name of your nearest dealer.
SPRAY-O-BOND COMPANY
2225 N. Humboldt
Milwaukee 12, Wis.
spray-O-bond

Latest Word on MASONRY CUTTING

Clipper

GUARANTEES...

... To Provide the Fastest Cuts ... at the Lowest Cost ... with the Greatest Ease Anytime ... Anywhere

and you can have a New Clipper on FREE TRIAL

9 NEW
1949 CLIPPER MASONRY SAWS

Yes, nine NEW models to choose from and each with outstanding features for smooth, fast and economical Clipper Cutting Action. See the 1949 DUSTLESS Model HD—cuts wet or dry—the 100% Answer to All Masonry Cutting. Contact your nearest Clipper Factory Branch for a FREE TRIAL on any of the nine Clipper models. See the "ADJUST-A-CUT" Control; "PRESSURE EQUALIZER" Spring; and the STREAMLINED Conveyor Cart . . . you'll know why Clipper is more outstanding than ever before!

Write for illustrated literature

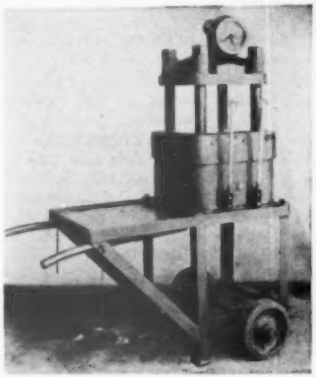
Clipper
NATION-WIDE DIRECT FACTORY SERVICE
MANUFACTURING CO.

2801 WARWICK • KANSAS CITY 8, MO.
Factory Branches
Philadelphia • St. Louis • Cleveland • Austin, Tex. • San Francisco

● Compression Testing Machine

Designed to enable the manufacturer of concrete block to run compression tests daily, a compact, portable hydraulic press made by Forney's Inc., Manufacturing Division, New Castle, Pa., is said to permit control over all of the variables which affect the compressive strength of building units.

With a ram pressure of 175 tons and a calibrated pressure gauge for direct



reading at a glance, the testing unit has dual manually-operated pumps. One brings the platen into position quickly; the other exerts crushing pressure very slowly in accordance with A. S. T. M. specifications. Thus two readings are available: one when the first sign of fracture appears and the other at the point of ultimate destruction.

A leveling plate is provided on the table, so that blocks can be easily checked for high spots; and the lower platen is self-aligning in order to compensate for surfaces slightly off parallel. A high-walled tray in which blocks are placed before testing protects the operator in case of bursting or shattering, which may occur when testing units other than concrete block; it also effects easy and safe removal after destruction has occurred. Forney's, Inc., 209 Elm Street, New Castle, Pa.

Out-Size Pipe Sections Made By Memphis, Tenn., Concern

At Memphis, Tenn., in the plant of Choctaw, Inc., concrete culvert pipe sections weighing more than 8½ tons will soon be manufactured in quantity, according to word from that city.

Founded 27 years ago by O. H. Miller as a plant for manufacturing and distributing metal culvert pipe, the concern has taken to concrete and is now a group of related businesses under the supervision of Mr. Miller.

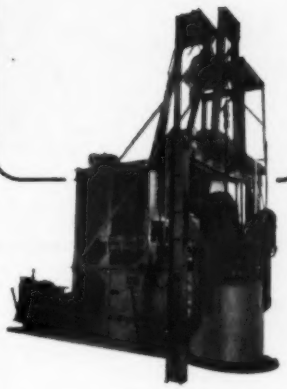
The new sections will have an outside diameter of 10½ feet and will weigh 16,650 lbs.

One of the newest industries of Leavenworth, Kan., is the Geiger Ready-Mix Company, owned and operated by E. W. Geiger Jr.

yes, you can

Buy or Lease

this Universal Concrete Pipe Machine



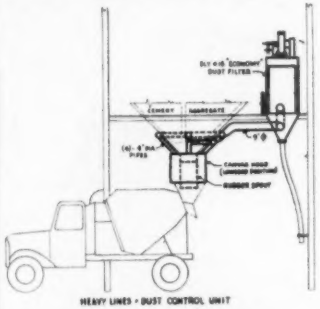
★ You needn't lay out the purchase price to begin enjoying the production and profits of this great machine. Leasing arrangements are possible on terms that assure profitable operation. The Universal Pipe Machine has set new higher standards for efficiency. It makes more pipe and better pipe with fewer man hours. Because it true-tamps at the incredible rate of 680 strokes-a-minute, you use a drier mix, get stronger pipe that handles with less damage, requires minimum curing. One of the four sizes (5"-24", 6"-48", 12"-60", 24"-72") will meet your requirements. Ask about the *Universal Lease Plan.*

UNIVERSAL CONCRETE MACHINERY CO.
297 South High Street Columbus, Ohio

● Ready-Mix Truck Filter

The W. W. Sly Mfg. Co. dust filter for the collection of cement dust at ready-mix truck batching consists of a Sly Economy dust filter with wire cloth bags, exhaust fan, 3-hp. motor, and a telescoping canvas hood with air piping to the dust filter. In addition to recovery of cement which would normally be lost as dust, labor costs in maintaining the cleanliness of the truck mixer are reduced.

The dust filter is mounted on the weigh platform or in some nearby location. The telescoping canvas hood is installed on the batcher bin at the discharge into the truck-mixer. Four 4-in.-dia. pipes draw dust-laden air into a 9-in.-dia. pipe and then on into the dust filter, where the dust is retained on the cloth bags. Clean air is discharged from the exhaust fan.



HEAVY LINES - DUST CONTROL UNIT

Operation is simple. When the truck mixer is in place with its hopper under the rubber spout, the weighman lowers the canvas hood by means of cables and pulleys, so that the hood drapes itself around the hopper. He presses a starter for the exhaust fan and releases the batch into the truck-mixer. The suction of the exhaust fan causes air to enter the hood and carry the dust through the piping into the dust filter. No dust can escape from the hood, as the rush of air into the hood carries the dust with it. After the batch has been dropped into the truck, the weighman stops the exhaust fan, raises the hood, and the truck pulls away. Twice a day the filter bags should be shaken by means of the manual shaker bar. The cement falls free of the bags into the hopper beneath and on into the canvas spout, from which it can be bagged or otherwise disposed of. The dust filter is furnished completely assembled, with fan and motor mounted on top. The purchaser installs the filter, hood and dust piping. W. W. Sly Mfg. Co., 4700 Train Ave., Cleveland, O.

● High-Lift Fork Truck

A small gas-powered fork-lift truck designed for interplant materials handling or where outside work predominates has been introduced by Elwell-Parker Electric Company, Cleveland, O.

Equipped with a 17-hp. air-cooled Wisconsin engine, electric generator and starter, the transmission and driving features are similar to that of an automobile. Lifting-lowering and tilting mechanisms are controlled by two levers located on the cowl at the right of steering wheel.

Each of the two widely-spaced cylinders for the low-pressure (850 lbs.) hydraulic lifting system is placed at opposite sides of the upright column, thus affording direct vision of load and travelway. The hydraulic pump is V-belt driven from the gas engine. Double-pitch heavy roll chains are used in secondary extension lift. An automatic device in the hoist unit safeguards against overloading or obstruction interference with fork travel, either up or down.

LOOK AT THE RECORD . . .

Proving OSWALT ENGINEERING SERVICE
improves Concrete Block Plant Performance !

A new Pennsylvania subscriber to Oswalt Engineering Service reports two 8-hour shifts now equal to two 10-hour shifts of the past, *plus* improved quality of product.

This record of increased efficiency is only one of many reported by Vibrapac plant operators, who agree that Oswalt Service insures larger output, better quality units, and minimum costs.

DUAL VIBRATOR
SYNCHRONIZED VIBRATOR
COMPOUND VIBRATOR

. . . Applicable to Vibrapac Plants Only

For new engineering set-up, new low prices, and new terms,
Write or Call . . .

OSWALT
ENGINEERING SERVICE CORP.

1335 CIRCLE AVE. FOREST PARK, ILL.
Phone: Columbus 1-7073 — Forest 6-3898

NOW . . . . A New BARTILE Product . . . . Interlocking CORRUGATED

BARTILE "Corrugated" is a fitting companion to the famous BARTILE French or Flat type. Designed to meet the demand for corrugated or round type cement roofing tile, yet maintaining the original double tongue and groove features for which BARTILE is famous. A new machine for the manufacture of corrugated-type BARTILE is available for immediate delivery. Write for prices and descriptive folder.

Corrugated Type

★ IT'S BEAUTIFUL

You've seen the beautiful all-concrete house pictured above in the November "Better Homes & Gardens" and "American Home" for October, in full-page advertisements sponsored by the Portland Cement Assn. It's roofed with BARTILE, the world's finest concrete roofing tile. Millions, seeing the illustrations and studying the detailed descriptions, will be wanting a BARTILE Roof over their heads.

★ IT'S PERMANENT

The spotlight of public interest today is focused squarely on the roof! The vogue for color, the crusade for fire safety, and the demand for permanence have created an entirely new era in roofing standards. BARTILE roofing tile provides new beauty and distinction, greater service, and additional value far greater than its moderate cost. BARTILE is permanent, dependable roofing that will outlive the building it covers.

★ IT'S PROFITABLE

●

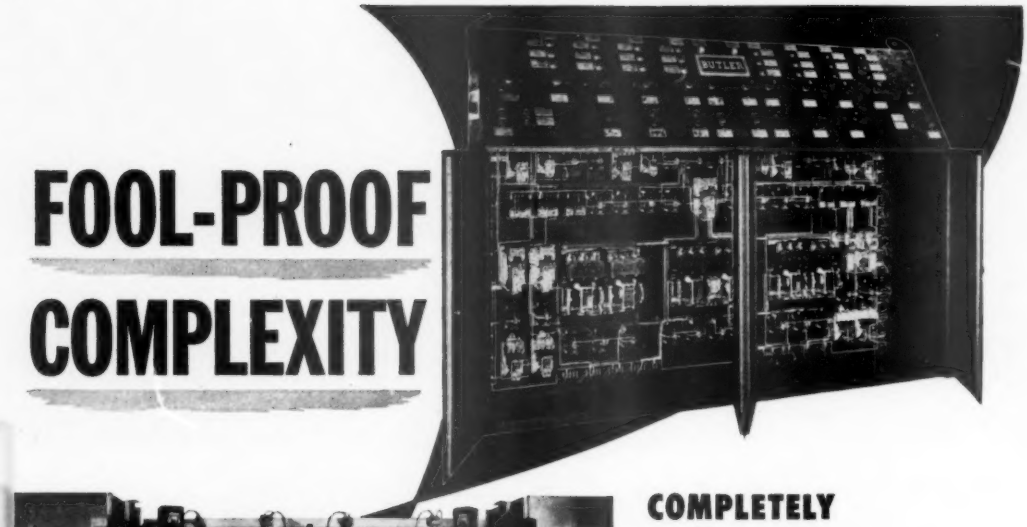
Be the Exclusive BARTILE Manufacturer in Your Community

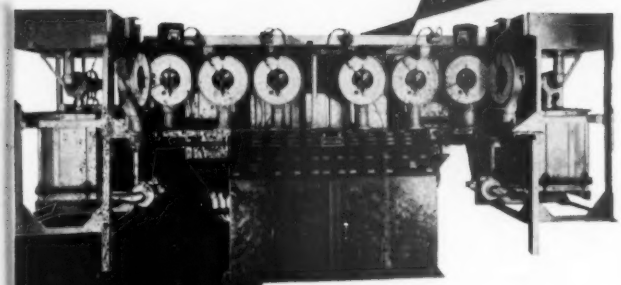
FRANCHISES STILL AVAILABLE

●

E. P. BARBER CO. 900 W. Valley Blvd. Bloomington, Calif.

FOOL-PROOF COMPLEXITY





COMPLETELY PUSH-BUTTON IN CONTROL

AMAZING, NEW

BUTLER WEIGH BATCHER FOR READY-MIXED PLANT

BATCHES 8 MATERIALS *AUTOMATICALLY*

Two Weigh Batchers for Ready-Mixed Plants, robot-like in their completely automatic operation, — engineered, designed and built by BUTLER for the Dravo Corporation, are today setting production records as barge-mounted units in Ohio River concrete construction.

In fool-proof wiring complexity these twins can be compared only with master switchboards for automatic dial telephones; certainly they are unsurpassed in the construction industry.

The batching cycle starts with a push-button on the control console. No action results until a series of pilot lights flash to show all scales are in empty balance and batcher discharge gates are closed. When batches are complete, photo-electric cells on scale dials actuate solenoid valves, — instantaneously shut off supply to batchers. Interlocking controls prevent abortive discharge.

Other features: white lights on console show which mixers are ready . . . automatic vibrator on cement batcher . . . "Ready for Batch" and "Batch Discharged" signal lights . . . Emergency batch buttons . . . Electrical recorder on each cement scale.

For a full, illustrated description of this BUTLER triumph write to BUTLER BIN COMPANY, Waukesha, Wisconsin.

BUTLER BIN COMPANY

WAUKESHA, WISCONSIN

To other producers of
high quality concrete masonry products

We offer an opportunity to manufacture a new product for greater volume...greater profits

STRESTCRETE —our new development for improved reinforced concrete construction—is ready for manufacturing and marketing by reputable firms under our licensing agreement. Into its development has gone many months of painstaking and costly research. STRESTCRETE has been thoroughly tested and proven. We are now prepared to grant franchises for exclusive territories to forward-looking firms in other localities. STRESTCRETE offers greater dollar volume—greater profits—for your plant. In addition, it offers to your customers a better, faster, more economical method of construction.

STRESTCRETE FRANCHISES

... for exclusive territories are still available in some areas. For complete information write to **STRESTCRETE DIVISION, BASALT ROCK CO., INC., Napa, California.**

STRESTCRETE DIVISION Basalt ROCK CO. INC. CONCRETE PRODUCTS

HOW A STRESTCRETE FRANCHISE WILL EXPAND YOUR MARKET...

A MORE NEARLY COMPLETED PRODUCT AT THE PLANT

With STRESTCRETE you'll be selling roofs, floors and ceilings and walls—virtually completed—instead of merely competing with other producers for the sale of standard masonry units for the walls alone.

MORE DIVERSIFIED USES

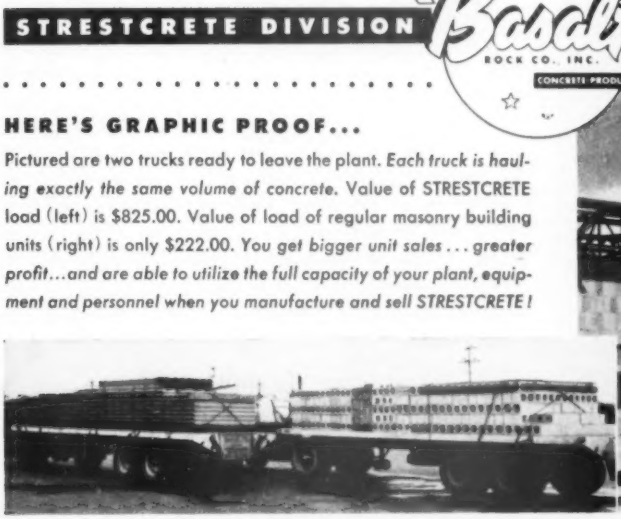
Used for roofs, ceilings and floors as well as walls and partitions, STRESTCRETE Products offer a broader market, greater volume and more profit per sale... with less competition.

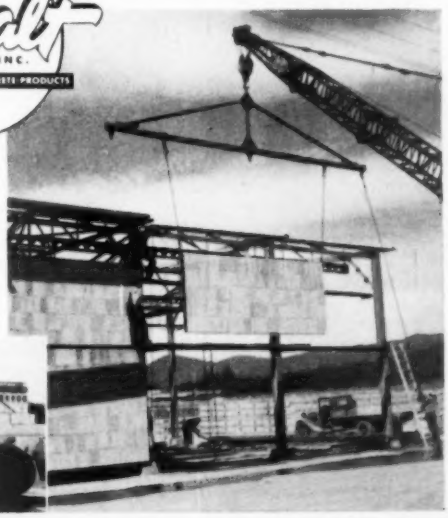
QUICKER SALES

STRESTCRETE has added sales appeal... because it offers greater speed in construction, cuts down labor on the job-site ... and produces sturdier, more durable, crack-free concrete structures.

HERE'S GRAPHIC PROOF...

Pictured are two trucks ready to leave the plant. *Each truck is hauling exactly the same volume of concrete.* Value of STRESTCRETE load (left) is $825.00. Value of load of regular masonry building units (right) is only $222.00. *You get bigger unit sales... greater profit...and are able to utilize the full capacity of your plant, equipment and personnel when you manufacture and sell STRESTCRETE!*





Get the FACTS on VAMPCO ALUMINUM CASEMENTS FOR BLOCK CONSTRUCTION

Yes, windows are YOUR business! And VAMPCO extruded casements, dimensioned for concrete or cinder block construction, provide the most versatile, attractive, and practical solution to the window problem. Read these SIX points of superiority!

1 **NO CUTTING OF BLOCK** necessary for fitting windows.

2 **SOLID SECTIONS** — extruded aluminum alloy of highest tensile and bearing strength.

3 **FLASH WELDED** — under electronic control for extra strength and rigidity.

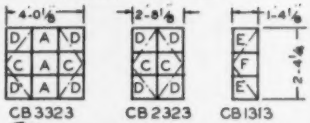
4 **ECONOMICAL INSTALLATION** — no more costly than good steel casements.

5 **LOWEST UPKEEP COSTS** — no rust, warp or rot — no painting, no refinishing.

6 **SCREENS AND STORM WINDOWS** available for all types in aluminum construction.

ECONOMICAL - VERSATILE - ENDURING!

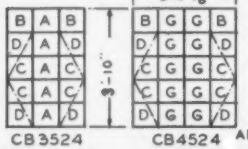
3 SIZES IN WIDTH
1, 2 and 3 blocks wide



CB3323 CB2323 CB1313

Write FOR CIRCULAR SHOWING STANDARD TYPES AND SIZES

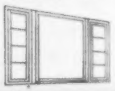
2 SIZES IN HEIGHT
3 and 5 blocks high with allowance for sill.



CB3524 CB4524

GLASS SCHEDULE		
MARK	WIDTH	HT.
A	15 7/8"	8 9/16"
B	14 7/8"	8 9/16"
C	13 1/2"	8 9/16"
D	13 1/2"	7 1/8"
E	13"	7 1/8"
F	13"	8 9/16"
G	15 3/16"	8 9/16"

Also PICTURE TYPE made up from stock casements . . . utility windows . . . basement windows . . . all these and many more are available for the cement block structure from the versatile VAMPCO stock line. All details on request!

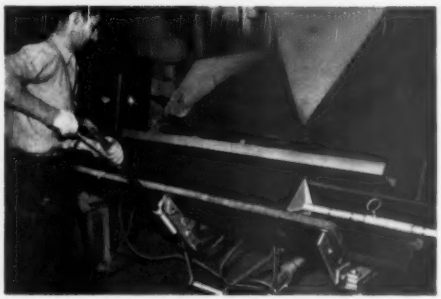


ALUMINUM WINDOWS FOR EVERY PURPOSE

VALLEY METAL PRODUCTS CO. PLAINWELL, MICHIGAN

SUCCESS DEMANDED A LARGER KENT LINTELATOR

— SO HERE IT IS —



Success with Kent Lintelator machines, wherever used, has brought new business to users with added profits they would not otherwise have enjoyed.

They began to ask for machines to make the largest sizes of lintels so we provided it in our new No. 9 machine which is not only ideal for making 4", 6" and 8" lintels up to 9'4" in length—but SILLS AND FENCE POSTS ALSO.

Here is the means of getting additional *plus* business and *plus* profits.

If it's profitable for others, it should be equally successful for you. Why don't you get *all the facts* if you haven't already done so, particularly in view of the fact that you will entail no obligation by doing so.

FOUR SIZES NOW AVAILABLE
for Making 4", 6" and 8" LINTELS

No. 6 for LINTELS up to	6'	in length
No. 7 for LINTELS up to	7'4"	in length
No. 8 for LINTELS up to	8'8"	in length
No. 9 for LINTELS up to	9'4"	in length

(also for SILLS AND FENCE POSTS)

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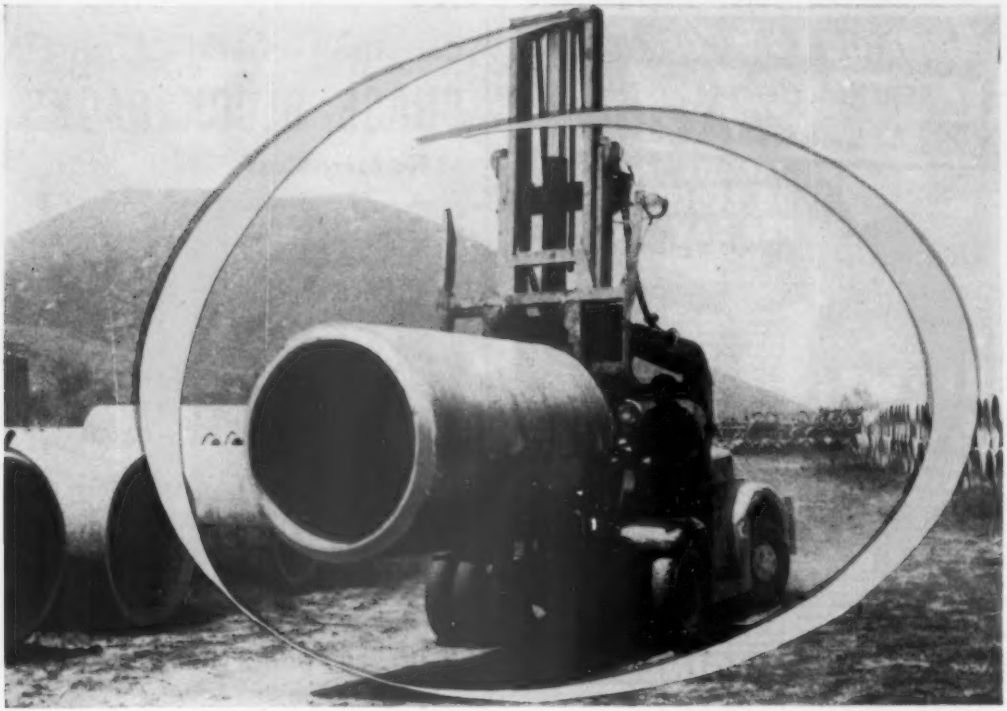
The **KENT MACHINE CO.** Cuyahoga Falls, Ohio
Manufacturers of CONCRETE PRODUCTS MACHINERY *Since 1925*



HYSTER 150...*King of Lift Trucks*

HERE'S THE HYSTER that has *worked* its way to the top by cutting costs in the CONCRETE INDUSTRY. 15,000 lb. capacity. Handles anything. Pneumatic tires. Easy on the operator. Heavy duty gasoline engine. Full hydraulic braking system. 17½ ft. lift to underside of load on 42 in. load arms. Hoists, transports, tiers heavy or bulky loads—inside or outside. Want a demonstration? Or a list of users? See your Hyster distributor.

HYSTER® COMPANY

THREE FACTORIES

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1026 MEYERS STREET...DANVILLE, ILLINOIS

Hyster manufactures 7 lift truck models, which have capacity ranges from 2,000 lbs to 30,000 lbs. All are equipped with pneumatic tires. Write for literature.

Amazing Low Cost!

GENERAL *Concrete Vibrator*

BLOCK MACHINE

CAPACITY 1000 BLOCKS PER DAY

Only $199 LESS MOTOR F.O.B. PLANT

SHIPPING WEIGHT 400 lbs.

Makes Partition Block 4x8x16

Makes Hollow Wall Block 6x8x16

Makes Reg. Hollow Wall Block 8x8x16

Makes Foundation Block 12x8x16

Makes Chimney Block 8x8x16 or 16x16

Also makes ½, ⅔, ¾, Sash, Corner, Pier Blocks

The General Block Machine is amazingly practical and efficient. It is the key to highly profitable production of concrete blocks. It is rugged in construction, simple in design and meets the demand for power equipment at very low cost. Now in use by contractors, builders and block plants all over the world. New split type mould box makes possible fast changeovers to different designs and sizes. Makes superior three core type blocks meeting all building code requirements. Vibrator shaft mounted in sealed ball bearings. Combines vibration, compaction and troweling. Powered by ½ H.P. electric motor, or rigged for gasoline engine. Can produce up to 1,000 blocks per day at minimum cost. Materials for blocks, cement, sand, or local materials readily obtainable anywhere. Full operating instructions and complete mixing formulas with each machine. Immediate delivery. Get full details without obligation.

Other Equipment Available: Large Concrete Block Machines, Cement Mixers, Conveyors, Hoppers, Ornamental Concrete Moulds, Brick Machines, Concrete Pipe Machines.

HOW TO BUILD YOUR OWN CONCRETE BLOCK HOME Only $1 Prepaid

Wonderful Book Written and Illustrated by Experts

Includes floor plans for 6 beautiful, easy to build concrete block bungalows. Shows many ways to save money. How to lay blocks, lay out building lines, mix concrete, build steps, porches and concrete floors. Mail at once with $1.

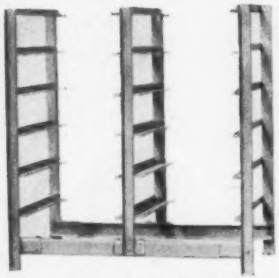
GENERAL ENGINES CO.

DEPT. Q2 • DREXEL BLDG. • PHILADELPHIA 6 • PA.

Corrosion-Resistant

CHASE BLOCK RACKS

at No Extra Cost



- *Lift truck racks*
- *Turntables*
- *Concrete block cars*
- *Transfer cars*
- *Dump cars*
- *Dryer cars*
- *Decks*
- *Clay cars*

We can furnish PALLETS for use with this rack.

Write for catalog and price list on complete Chase line.

Model illustrated: 72-block capacity, handles 24 18½x26" pallets. For use with fork or platform lift truck; offers ample clearance for magnetic offbearer. Shipped knocked down for low freight cost. Easily assembled without special tools or welding. The Chase corrosion-resistant, high strength steel, rigid field connection and sturdy construction found in this model are available also in any style or capacity rack or car you need.

Chase Foundry & Mfg. Co.

Columbus 7, Ohio

MOISTURE-FREE STORAGE

NOW POSSIBLE with MARIETTA'S AIR-CELL STAVES made of AGLITE*

* The new lightweight aggregate that permits lighter, yet stronger construction . . . write for full information on AGLITE today!

BUILT TO ENDURE WITH MARIETTA Air-cell SILOS & BUILDING UNITS

The Marietta Concrete Corp., Marietta, Ohio

COLORS

SYNTHETIC CONCENTRATED

RED

YELLOW BLUE

GREEN BROWN

BLACK

Color Card on Request

REICHARD-COULSTON, Inc.

15 E. 26th St., New York 10, N. Y. Factory Bethlehem, Pa.

LIGHTWEIGHT AGGREGATE FOR THE CONCRETE BUILDINGS OF TOMORROW

- Quality rhyolite pumice . . . . carefully graded to specifications
- Highest insulating properties
- Greatest acoustical rating
- Nailable, durable, fireproof

W-W PUMICE CO.

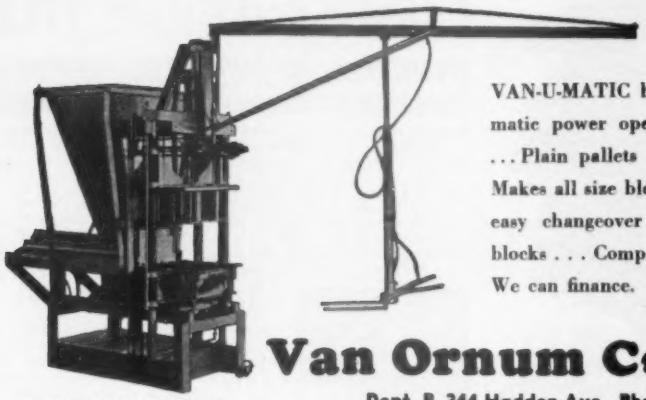
4040 WILSHIRE BLVD.

LOS ANGELES, CALIF.

Ph. Dunkirk 2-4808

Different... Sensational... **WORK THE FIRST DAY AND THEREAFTER**

$4300.00! HOW CAN SO LITTLE MONEY BUY SO MUCH! 400 BLOCKS PER HOUR



VAN-U-MATIC BLOCKMAKER

VAN-U-MATIC has ALL the features . . . Pneumatic power operation, vibration and off-bearer . . . Plain pallets (⅓ usual pallet investment) . . . Makes all size blocks, 16" or 18" length . . . Quick, easy changeover . . . True dimensional, Perfect blocks . . . Compact, easy to install and clean . . . We can finance.

Van Ornum Co. **Westmont, N. J.**

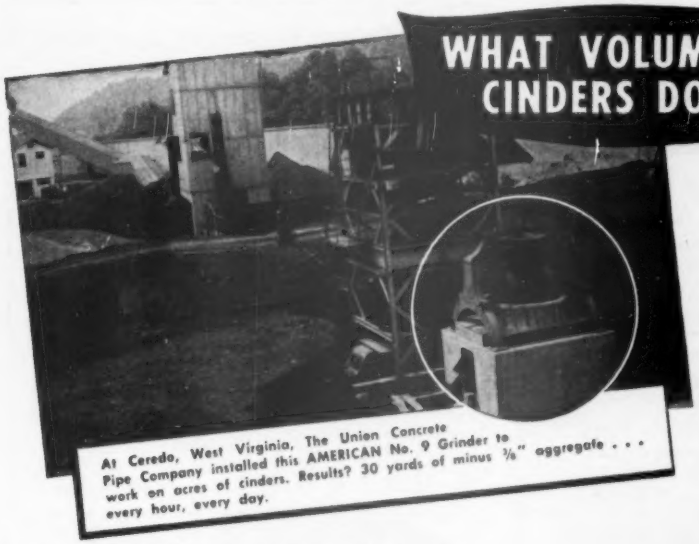
Dept. P, 344 Haddon Ave., Phone COllingswood 5-4767

DEMONSTRATION PLANTS AND REPRESENTATIVES

Tobin Bros., Florence, Mass. — John Haeussler Con. Prod., Buffalo, N. Y. — G. W. Robertson, Hillsdale, N. Y. — Pumicrete Sales Co., Fresno, California — F. H. Yanks, Chester, Pa.

Gerald Associates, Inc., Union City, Mich. — Van-U-Matic Sales Co., Woodbridge, N. J. — Northeast Con. Prod., Northeast, Md. — Maysville Con. Prod., Maysville, Ky.

WHAT VOLUME OF GROUND CINDERS DO YOU NEED?



At Ceredo, West Virginia, The Union Concrete Pipe Company installed this AMERICAN No. 9 Grinder to work on acres of cinders. Results? 30 yards of minus ⅜" aggregate . . . every hour, every day.

Select from 8 AMERICAN Grinders Hourly Output 4 Yards to 75 Yards!

Write your own ticket for your plant's cinder-grinding requirements . . . one of the 8 AMERICAN Grinders will give you the output needed . . . deliver minus ⅜" mesh aggregate without additional separation! Your AMERICAN Grinder will require minimum maintenance . . . will conserve power . . . will help produce low-cost, top-quality cinder block. Write . . . wire . . . phone . . . ask for an AMERICAN grinding expert to help you lick your problem.

CAPACITIES . . . YDS. PER HOUR

No. 5 4	No. 9 30
No. 6 6	No. 482 35
No. 7 12	No. 418 50
No. 8 20	No. 384 75

American GRINDERS by

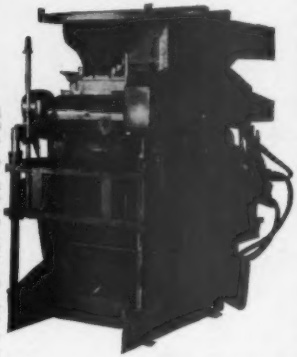
W. A. RIDDELL CORP.

BUCYRUS, OHIO

FLEMING
THE FMC OF ST. LOUIS
180

THE QUALITY NAME IN CONCRETE PRODUCTS PLANT EQUIPMENT

Automatic Concrete Block Machine



CUSTOMERS SAY —

"I still say you should call it the 225 as it turns out that many per hour, day in and day out.
Kingsport, Tennessee

"While you rate them at 180 per hour, we are presently running both machines at a rate of 240 blocks per hour on each. Our total labor cost in the kiln is 1½ cents per block."
Wichita, Kansas

"The timing is positive and not regulated by the operator. But, best of all, the machine is well made."
Independence, Missouri

THE PLAIN PALLET VIBRATOR AT LOW COST!

COMPLETE BLOCK PLANTS ENGINEERED TO YOUR REQUIREMENTS

FLEMING MANUFACTURING CO. INC
COMPLETE CONCRETE BLOCK PLANT EQUIPMENT

4989 FYLER AVE. - - - - ST. LOUIS 9, MO.

CEMENT DRAIN TILE

Money-Making Manufacturing Opportunity

Today's tremendous demand for drain tile opens up a choice field for the wide-awake concrete products manufacturer. Either as a business by itself or as a profitable addition to the regular line.

The Champion machine makes all sizes of tile up to 12-inch diameter. With such a range you can supply not only the huge farm market, but many others where drain tile is urgently needed—reclamation projects, home building, road construction, subdivision activities, etc.

Low Cost—High Profits

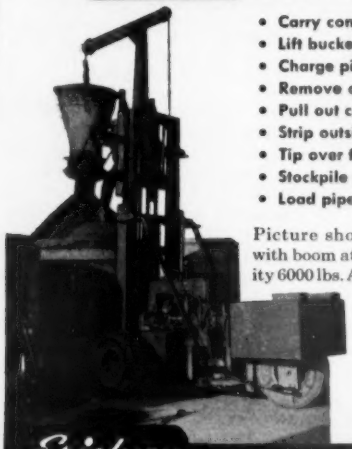
Tile made on the Champion are outstanding in quality—dense, strong, uniform. Far better than clay tile yet can sell for less—even after allowing a handsome profit. Machine is simple, compact, easy to operate.

Get the facts. Write for interesting literature about the business and the moderate priced equipment.

CONCRETE EQUIPMENT CO.
532 Ottawa Ave. • Holland, Mich.

Handle ANY JOB in a concrete Pipe Plant

with an *Erickson* **POWER LIFT TRUCK**



- Carry concrete bucket
- Lift bucket over form
- Charge pipe form
- Remove cone from form
- Pull out core
- Strip outside form
- Tip over finished pipe
- Stockpile pipe
- Load pipe on trailer

Picture shows Model F-6B with boom attachment, capacity 6000 lbs. Also F-10, capacity 10,000 lbs., and F-16, capacity 16,000 lbs.

Write for Literature

Erickson POWER LIFT TRUCKS, Inc.
1403 Marshall Street N. E. • Minneapolis 13, Minnesota

For Efficient, Economical Operation

INVESTIGATE

MULTI-MIXER CORE SAND MIXERS
Completely Automatic

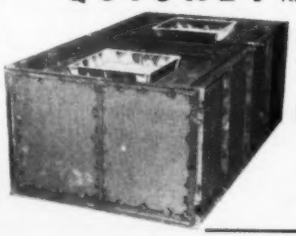
MULTICO BLOCK MAKING MACHINES
Completely Automatic

MULTIPLEX MACHINERY CORP.
ELMORE, OHIO

CARPENTER SEPTIC TANK FORMS

and handling equipment are preferred by large precast tank manufacturers because they are:

QUICKLY *poured stripped handled reset for pouring again*



And lastly, loaded transported and set in the hole by *ONE MAN.*

CARPENTER MANUFACTURING COMPANY
Phone 22018
R.F.D. 1, Box 470
Richmond 23, Virginia

IT'S BIG • IT'S FACTUAL! • IT'S COMPLETE!
IT'S READY NOW

1949 Edition
CONCRETE INDUSTRIES YEARBOOK

Largest in its History... incorporating all the latest available information on machinery equipment and processes

Completely Re-written—Pages of New Information

Because of the rapid growth of the industry in the past few years, and the important technological developments which have accompanied that growth, the Yearbook has been re-edited from front cover to back. Pages of new information, drawn from the experiences of the industry's outstanding producers, have been added to make this edition more than ever the indispensable text book of the concrete field.

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Established producers and newcomers alike will find in this bigger and better Yearbook a wealth of well-arranged, specific operating information to assist them in solving production problems and increasing profits. Plant design, the selection and characteristics of raw materials, batching, mixing, curing, handling and marketing are just a few of the important subjects treated.

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When new plants are built, when equipment requires replacement, or when existing plants require modernizing and expansion, experienced operators unfailingly turn to The Concrete Industries Yearbook for the know-how information they must have. Today, just as when it was first published 11 years ago, the Yearbook is absolutely unique in its field. And in every year since its inception the demand for copies has far exceeded supply.

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With every producible block, joist and cubic yard of concrete desperately needed today to ease the most severe housing shortage this nation has ever known, you will want more than ever to have on your desk this practical, down-to-earth guide to better production and higher profits.

So place your advance order now and avoid the risk of being disappointed. The supply will be limited, and distribution will be on the first come, first served basis.

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Chicago 5, Illinois

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City .....Zone.....State.....

MILLERS PREPARED ANTHRACITE

CINDERS

SHIPPED ANYWHERE IN CARLOAD LOTS

- Eliminate Mixing Troubles
- Speed Production
- Produce Top Quality Blocks
- Reduce Production Costs

These cinders are processed from carefully selected deposits that are free from stain-producing and combustible materials.

Write NOW For Details

H. HESSEY MILLER P. O. Box 495 Chester, Pa.

CONCRETE MANUFACTURER USED EQUIPMENT SECTION

WANTED

STEARNS JOLTCRETE
No. 7 or No. 9

Box No. M 4
c/o PIT AND QUARRY PUBLICATIONS
538 So. Clark St. Chicago 5, Illinois

WANTED TO BUY

Besser "Victory" Vibrapac Block Machine, with pallets. Must be in good condition and reasonable.

Box No. L 8, c/o Pit and Quarry
538 So. Clark St. Chicago 5, Illinois

FOR SALE

Besser Vibrapac—makes 3-4, 2-6, 2-8, 1-10, 1-12, 8" header, air offbearer, Besser 25' mixer, 30' skip, in good cond. with many new parts, approx. 1700 steel pallets, 70 steel racks, air compressor, water meter, automatic transporter with new battery & parts, new—never used 45' steel enc. belt bucket elev., 45 yd. 2 comp. steel bin with vol. batcher, 1948 Erickson fork lift used very little, with motors, starters, switches, all for $20,000.00.

Besser semi-automatic 3½ per minute tamper with V belt drive and pallets $600.00.

25' Multiplex mixer, motor & V belt drive, new liners, like new $1200.00.
35' open steel bucket elev. with new Pintle chain $300.00.

Int. K-8 with 10 motor 24' flat bed Highway Trailer with 10.00 tires all around, low mileage, first class shape $4000.00.

STRONG BLOCK CO.
La Crosse, Wisc.

UNBREAKABLE PALLET RINGS
Write for full information
TEXAS FOUNDRIES
LUFKIN, TEXAS

SPACE HEATERS
War Surplus Bargain
New — Ready To Use!
40,000 BTU capacity

—Burning gasoline, kerosene or diesel fuel.
—Electric blower—12 V. DC or 110 V. AC using small transformer.

Portable, Quick, Clean Heat

Ideal for curing room, concrete plants, work under construction, emergency heat, or auxiliary heaters.

$95.00 each

Clapp, Riley and Hall Co.
14 No. Clinton St.,
Chicago 7, Illinois

FOR SALE

1—2 block pressed pac machine
51 racks
2700 8" pallets
1200 12" pallets
500 4" pallets
8", 12" & 4" attachments
1—hydraulic jack
1—Stearns cu. ft. mixer
1—12 cu. ft. skip loader

AMISS BLOCK COMPANY
East Lansing, Michigan

FOR SALE — TRANSIT MIXER

2 cu. yd. 1941 Jaeger mounted on 1942 Chevrolet G. I. 4 x 4. Running every day. Cash Price $1,000. F.O.B. Decatur, Illinois.

GROHNE CONCRETE PRODUCTS CO.
2594 No. Water Street Decatur, Ill.

FOR SALE

1—No. 9 Stearns Joltcrete with off-bearer and Power Carriage
4", 6", and 8" attachments
1—Turntable
4700—4" pallets
6700—6" pallets
4600—8" pallets

ED. DEVRIES AND SONS
1400 Walker St. N. W., Grand Rapids 4, Michigan

PACKER-HEAD WINGS

McCracken Type — PROVED to last as long or longer — yet cost considerably less. Write for prices.

TEXAS FOUNDRIES
LUFKIN, TEXAS

CEMENT COLORS — PROMPT SHIPMENTS

Write for samples and prices of "LANSCO" CEMENT COLORS in bright shades of RED, YELLOW, GREEN, BLUE, BLACK, BROWN. Manufactured by

LANDERS-SEGAL COLOR CO.
76 Delevan Street, Brooklyn 31, N. Y.

FOR SALE

2 Stearns Clippers in good condition with 8", 12" and 4" attachments.
All equipment completely motorized, will sell cheap. Also 4000 8" pallets — 40c each.

THE LENOX CEMENT PRODUCTS CO.
Richmond (Lenox P. O.) Michigan

FOR SALE

25 cu. ft. BESSER Mixer with motor plus unused Gate Plate, unused Gate Liner, unused Dust Hubs and unused End Plates. Was $900.00 NOW $750.00 F.O.B. our plant.

BOWLING GREEN CONCRETE PRODUCTS COMPANY
Phone 2296
Bowling Green, Kentucky

FOR SALE

One Graveley, 2 block machine, 1 hopper, 1 off-bearer. Above equipment in good operation. $495.00 or trade for useful block plant equipment, preferably power lift truck. Capacity of above 500 regular blocks per hour.

Lynches Concrete Blocks, Inc.
Phone 5803, Battleboro, North Carolina

Franchise Available:

Brikcrete franchise and completely modern plant in Northern Indiana. Plant completely equipped for immediate operations. Will lease plant either stipulated monthly rental or on royalty basis.

GOSHEN VERILITE COMPANY
512 N. Seventh Street Goshen, Indiana

MINERAL COLORS
for
BRICK MORTAR
STUCCO-PLASTER-CONCRETE
"Fine Because of Their Fineness"
Ask for samples and recommendations.
BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

PENN-DIXIE CEMENTS

PORTLAND
PENN-DIXIE
CEMENT

PENNSYLVANIA-DIXIE CEMENT CORPORATION

OFFICES:

NEW YORK, N. Y. — NAZARETH PHILADELPHIA, BUTLER & PITTSBURGH, PA. — BOSTON, MASS.
ATLANTA, GA. — DES MOINES, IOWA — CHATTANOOGA, TENN.

PLANTS:

BATH, NAZARETH, PENN ALLEN & WEST WINFIELD, PA. — RICHARD CITY & KINGSPORT, TENN.
CLINCHFIELD, GEORGIA — WEST DES MOINES, IOWA

IF YOUR GOAL IS

- LOWER PRODUCTION COST
- MORE BLOCKS PER DAY
- BETTER QUALITY PRODUCT

Then here's your machine

LITH-I-BLOCK

Write

LITH-I-BAR CO.
Dept. 111, Holland, Mich.

Beautify and Protect Porous Masonry with ONE COAT AGRASEAL

- For exterior or interior use on cinder blocks, light-weight aggregate and concrete blocks.
- Better than two or more coats of ordinary cement coatings.
- Fills all voids. No hair checking. No alligator checking. No powdering.
- No expensive equipment needed. Apply with ordinary scrub brush or short bristle paint brush.
- Easy mixing. No lumps. Quickly soluble.
- Easy brushing. Spreads like butter. Cures fast.
- Comes in white and seven beautiful shades of ivory, light buff, grey, cream, green, sunny yellow, brick red. Easy to blend for pastel shades.

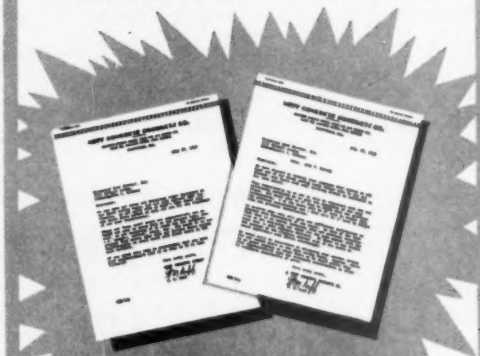
Write for details!

TAMMS INDUSTRIES, INC.
(formerly Tamms Silica Co.)
228 N. La Salle Street — Chicago 1, Ill.

You can no longer afford to build your own CURING ROOM DOORS!

. . . because you can now buy a more durable, more efficient manufactured door that will actually *save you money!* It's the new light weight, all aluminum, "Uni-Temp" door—fully insulated and vapor sealed. It's faster to handle—saves fuel—saves repair costs—insures uniform curing—and the price is surprisingly low!

WHAT DO OTHERS THINK? The Neff Concrete Products Co., Danville, Ill., recently wrote:



"July 28, 1949

"We now have our three new Universal doors installed . . . and are well pleased with the results; we are sorry that we didn't know about your new style doors before we made our own for the remainder of our door requirements.

"Since our 'home made' doors are comparatively new we would not want to scrap them at the present time . . ."

THEN . . .

"Aug. 16, 1949

"We have decided to install your complete door system on the East end of our block curing rooms rather than to use our present wood doors . . . we are enclosing our check for the same amount . . ."

Let us show you how you can increase operating efficiency, maintain a more uniformly high quality product—yet *actually save money*—by installing the new low cost, light weight, all aluminum, "Uni-Temp" door.

Write, wire, or phone (CApitol 8677):

SINCE 1904

UNIVERSAL DOOR CARRIER, INC

QUALITY DOORS AND CARRIERS

1117 Cornell Avenue Indianapolis 2, Ind.

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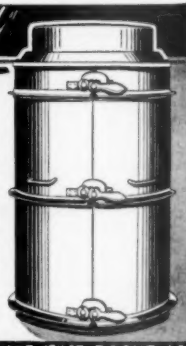
THE "Quinn Standard" FOR CONCRETE PIPE



The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

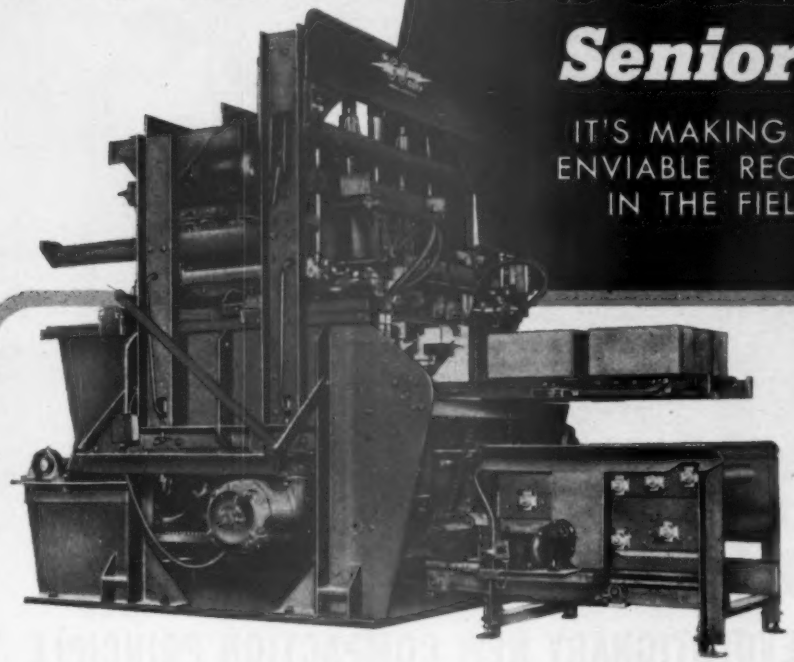
WRITE TODAY. Complete information, prices, and estimates sent on request.

Also manufacturers QUINN CONCRETE PIPE MACHINES

QUINN WIRE & IRON WORKS 1627 12TH ST. BOONE, IA

Have you seen the GOCORP Senior?

IT'S MAKING AN ENVIABLE RECORD IN THE FIELD



Patents allowed and pending

ONLY "GOCORP" GIVES YOU THESE ADVANTAGES

which mean better blocks at lower costs

AUTOMATIC—including pallet return and quality control.

SEQUENCE CYCLE—each step quickly adjustable to best accommodate any block and aggregate.

HOPPER FEED—direct to mold box. No feed drawer.

EXCEEDS twelve 8" blocks per minute.

HYDRAULIC—the ultimate drive. Simple, dependable, and accessible.

RESONANT VIBRATION—effective, quiet, non-abusive to machine.

STANDARD—plain pallets and racks. Three 8" per pallet. Pallets are cleaned, oiled, and reversed each cycle

LOW COST—and you own it.

OTHER GOCORP BLOCK MACHINES

"KING"—24 blocks per minute

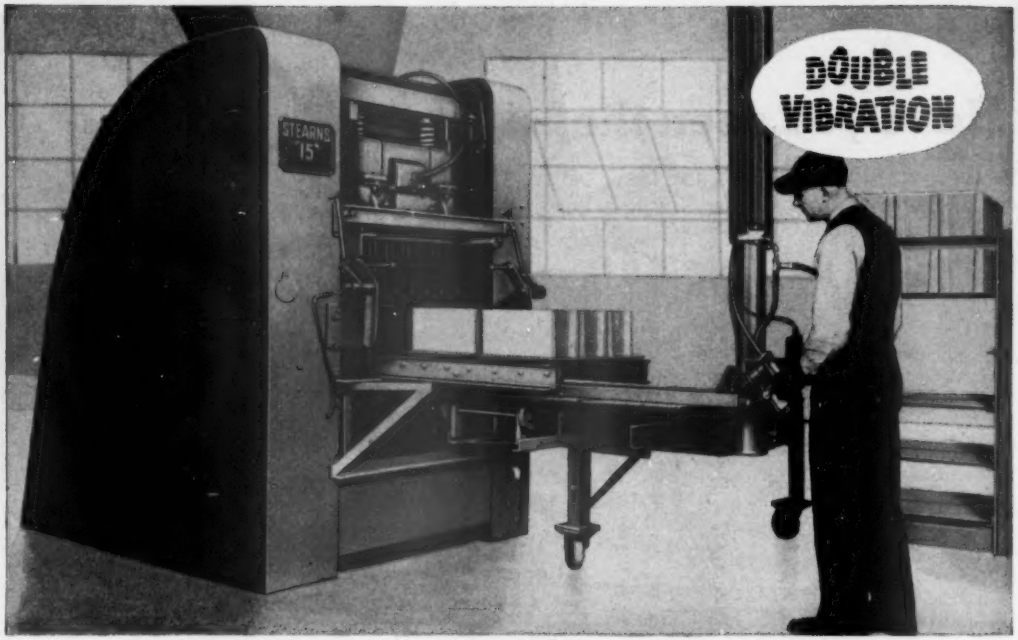
"JUNIOR"—3 to 8 blocks per minute

OTHER GOCORP EQUIPMENT

Batch Mixers • Continuous Mixers • Testing Machines • Pipe and Drain Tile Machines • Complete Parts and Attachments for Your Present Stearns Equipment.

THE GENE OLSEN CORP

401 GRACE ST. • ADRIAN, MICH. • PHONE 2120



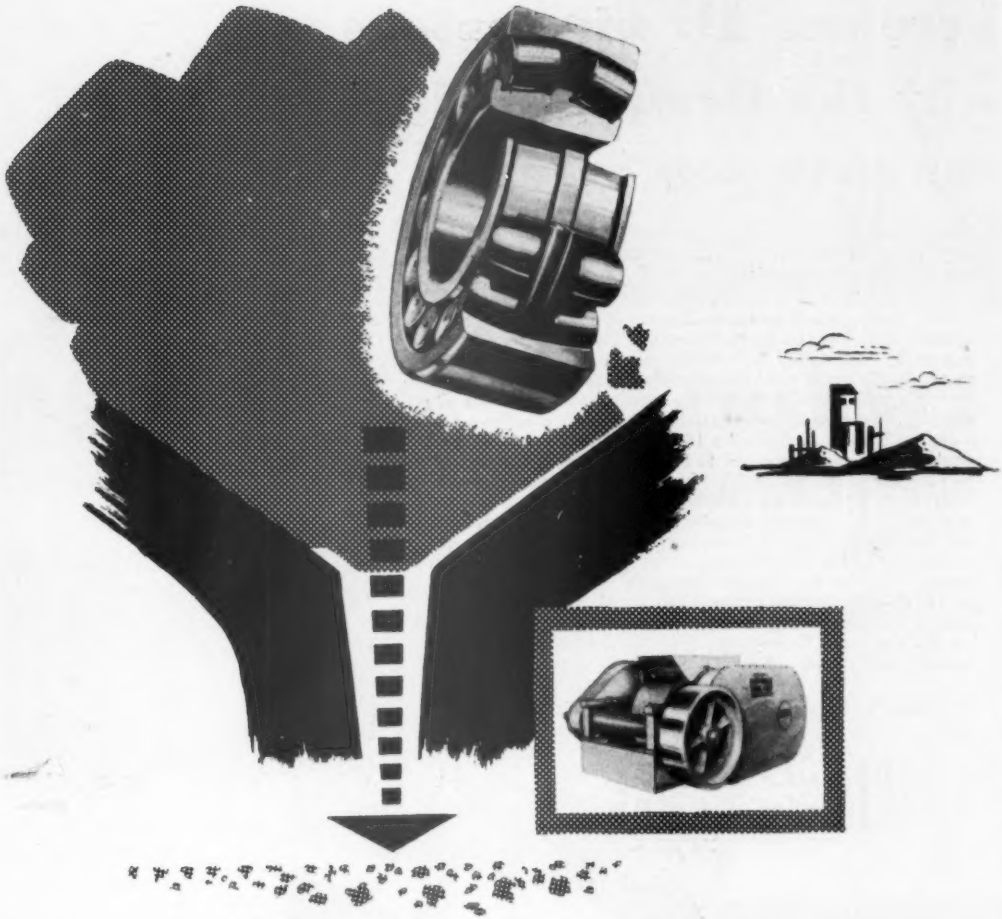
Stearns LEADS THE FIELD WITH REVOLUTIONARY NEW COMPACTION PRINCIPLE

The Stearns "15" and Joltcrete Concrete Block Machines today surpass even their former ability to manufacture block you are proud to sell. The incorporation of the revolutionary, new Dual Shaft, Uni-directional Vibrating Unit into Stearns' already famous patented principle of vibration under pressure gives the product even more uniform top-to-bottom texture — even greater density—than ever before! Besides increasing the extremely high production rates of these proven machines, the new unit means trouble-free operation of vibrating parts through its rugged simplicity of design. Eliminates all jacks—speeds clean up—easily installed! Invest in a new Stearns, or have your present model brought up to the minute! Write, wire or telephone.

MODERNIZE WITH A STEARNS!
BACKED BY MORE THAN A QUARTER-CENTURY OF KNOW-HOW!

Descriptions, specifications, service manuals and prices on request. Stearns Consulting Engineers are always at your service.

STEARNS
MANUFACTURING COMPANY · INC
ADRIAN • MICHIGAN



the crusher that "chews" rocks
works longer on maintenance-free SKF *bearings*

When SKF Bearings are specified on crushers and screens, reliability, long life, maximum capacity, are assured by the manufacturer. And that means the operator gets high, uninterrupted production.

HERE'S WHERE AND WHY SKF BEARINGS ARE PREFERRED:

Jaw Crushers: SKF Bearings at both main and pinion locations . . . for minimum operator attention.

Roll Crushers, Hammermills and Impact Breakers: SKF Pillow Blocks provide a rugged and economical housing for the spherical roller bearings. Design of these machines utilizes the tapered bore spherical roller bearing mounted directly on a tapered journal. This design permits large fillets, eliminating stress concentration.

Vibrating Screens: Eccentric motion imposes severe loads. SKF Bearings on the eccentric portion of the shaft withstand heavy gyrating loads as well as the variable load of the material being processed.

Wherever a shaft or cylinder turns . . . that's the place for an SKF Bearing, and there's one to meet every requirement. Our engineers can help with your bearing applications. SKF Industries, Inc., Philadelphia 32, Pa. 6649

Industrial Bearings engineered by **SKF**

here are 10 big reasons why the Dempster-Diggster can save you money

You can cut production costs in excavation work, in stockpiling, loading, or in construction work on the road with these 10 Dempster-Diggster advantages.

1. The power-packed Dempster-Diggster is the only automotive hydraulic shovel and loader that gives you Big Shovel performance in a small, mobile unit. 2. It is the only small shovel that works on a hydraulic crowd and hoist principle. Its variable crowd action at any dipper position means the Dempster-Diggster can dig lower . . . 15 inches below grade. Exclusive hoisting action means it can dig higher . . . digs out a 15 ft. bank. 3. It travels at truck speeds on the road. You get to and from the job faster. 4. It gets in tight places on big jobs, freeing large shovels for heavier work. 5. Its extraordinary dumping reach loads trucks evenly and to capacity. 6. Dempster-Diggster buckets are easily interchangeable and are available in three sizes — 1 cu. yd. (heaped- with hardened steel teeth for digging . . . 1½ and 2 cu. yd. buckets without teeth for loading and stockpiling. 7. Power is supplied by a heavy duty gasoline or diesel engine. 8. Hoisting, crowding, steering and braking are all 100% hydraulic. 9. Hydraulic Steering give you faster, finger-tip control. 10. The Dempster-Diggster shovels and digs hydraulically . . . not with its wheels.

For complete information on this amazing machine, write today!

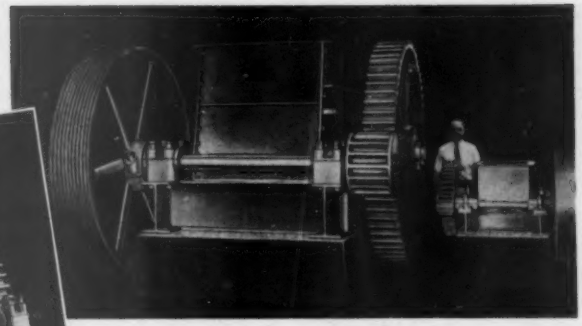
DEMPSTER DIGGSTER
TRADE MARK

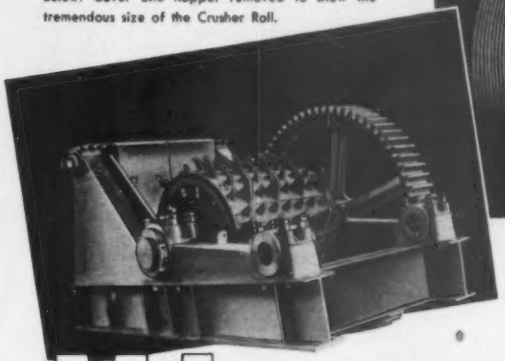
DEMPSTER BROTHERS, Inc.

2119 N. Knox — Knoxville, Tennessee

Right: McLanahan designs and builds Crushers for every size operation and for any material.

Below: Cover and hopper removed to show the tremendous size of the Crusher Roll.

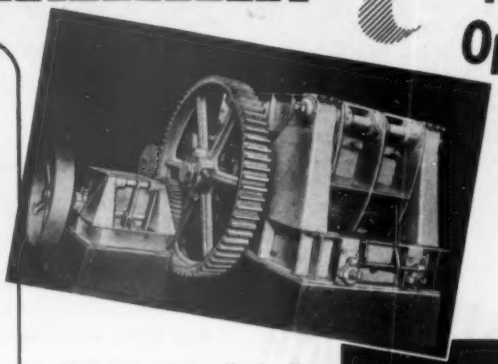




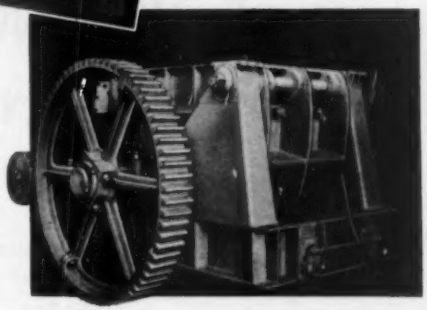
McLANAHAN Crushers

Large enough for any Operation

- Heavy Duty Rock Crushers — Automatic Steelstrut Toggle, Quick Adjustment and Pioneer series
- Light Duty Single Rolls — Black Diamond and Bantam Buster in steel, semi-steel or fabricated frames
- Double Roll Fabricated Steel Crushers
- Jaw Crushers
- Portable and Semi-Portable Crushing Plants
- Dry Pans Super Heavy Duty
- Conveyors
- Dryers of Revolving Type
- Elevators
- Feeders
- Hoists
- Ore Jigs
- Screens
- Washers & Scrubbers
- Special Machinery and Complete Plants



Two other views of a giant Single Roll Crusher recently shipped from the McLanahan plant.



Here is a specially built Crusher designed for an underground operation, so large that it had to be cut apart and taken down into the pit and then welded together. Typical of the engineering and fabricating ability available at McLanahan to solve your toughest crushing problem.

Headquarters for Pit, Mine and Quarry *Modernization*

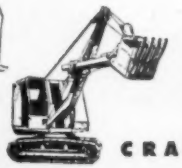
McLANAHAN and STONE Corp.

HOLLIDAYSBURG, PA.

Since 1835

HARD STUFF IS A SOFT TOUCH WITH A BAY CITY

When the going gets tough, you can depend on a BAY CITY 65 regardless of operating conditions. With rugged one-piece chain crowd, straddle type dipper sticks, big 1¼ yard bucket and plenty of Diesel power to spare, this 65 keeps a fleet of trucks moving hour after hour. Readily accessible assemblies makes servicing simple. The 65 is the shovel with all the features . . . boosters clutches . . . tandem drums in ball bearings . . . helical gears for quiet operation. Owners specify BAY CITY . . . operators prefer them. Why not write today for complete information on this dependable machine. . . .



BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

BAY CITY SHOVELS INC., BAY CITY, MICHIGAN See your nearest Bay City dealer for excavating and material handling equipment in sizes from ⅜ to 1¼ yard with crane rating up to 25 tons. Both crawler and pneumatic tire mountings.

REDUCE DOWNTIME

... with THERMALLOY

Feed Ends and Feed Pipes

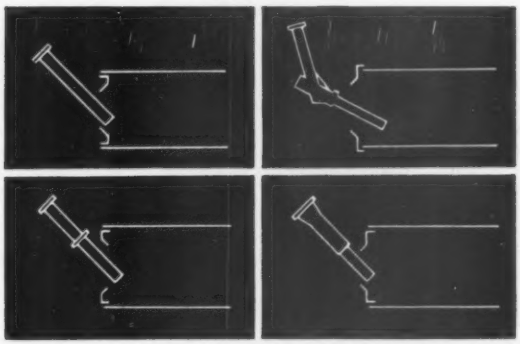
THERMALLOY is tough! It stands up under rough treatment ... resists high temperatures, corrosive gases and abrasives. Thermalloy Feed Ends have lasted up to *10 times as long* as "bricked-up" ends ... thereby materially reducing down-time and replacement costs. That's why many kiln operators are switching to THERMALLOY feed ends and feed pipes.

No special "built-up" brick feed end is necessary on your kiln with THERMALLOY end rings. The segmental design is adaptable to a variety of different kiln sizes and prevents cracking due to expansion and contraction. Shell distortion is eliminated, without shortening the effective working length of your kiln.

THERMALLOY feed pipes also play an important part in economical kiln operation. Their ability to resist abrasive wear and withstand elevated temperatures without scaling or cracking has been proved in hundreds of calcining installations.

Other THERMALLOY kiln parts include burner nozzles, cooler parts, drag chain, outlet grates, discharge ends, clinker chutes. For full information, call your nearest Electro-Alloys engineer or write Electro-Alloys Division, 2004 Taylor Street, Elyria, Ohio.

Easy to install



Drawings above show several different ways in which Thermalloy feed ends and feed pipes can be adapted to your kiln.

AMERICAN Brake Shoe COMPANY

ELECTRO-ALLOYS DIVISION
ELYRIA, OHIO

Blast for This Road Without Damaging the House?

They Did It!

By Controlling Throw With the

ROCKMASTER "16" Blasting System!

How's this for a tough blasting assignment? The A. B. Long Construction Co., widening a highway through Hunter, Tennessee, was faced with the job of blasting away 14 feet of rock bluff only 47 feet from a home and directly under a main powerline. Rock had to be broken small enough for a ¾-yard shovel. Small blasts would cost too much in time and money. The shooting plan called for firing 174 holes at one time using 525 pounds of Atlas dynamite—depending on the Atlas ROCKMASTER "16" Blasting System to hold vibration and rock-throw to a minimum. Old hands at blasting said that the house was sure to be showered with rock fragments.

They were wrong! Once again, ROCKMASTER "16" did the "impossible"! Not a single rock touched the house or powerline . . . not a single window was even cracked! What is more, shovels moved right in after the blast: the finely broken rock, instead of being scattered all over the place, was in a neat pile almost exactly in its original position.

ROCKMASTER "16" can probably help solve *your* blasting problems—whether you blast rock, coal, or metal . . . on the surface or underground! Read how it's done in the new ROCKMASTER "16" booklet, which tells how this new blasting system, pioneered by Atlas, controls the timing between holes to thousandths of a second. Read how the proper choice of timing, loading, and explosives gives you far better control of breakage . . . saves drilling and dynamite . . . cuts down noise and vibration . . . controls throw as it never could be controlled before.

Write for your copy of the ROCKMASTER "16" booklet today and see for yourself how this latest Atlas development—featuring *sixteen* milli-second delay detonators—can help *you!*

ROCKMASTER "16" TIMINGS

Rockmaster No.	Avg. Time of Each Delay from Zero (milli-seconds)
0 (zero)	0 (inst.)
1	8
2	25
3	50
4	75
5	100
6	125
7	150
8	175
9	200
10	250
11	300
12	350
13	400
14	450
15	500
16	550

ROCKMASTER: Reg. U. S. Pat. Off.

ATLAS EXPLOSIVES

"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington 99, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

"IDEAL"

CONVEYING WITH FULLER-KINYON PUMPS

The two completely new plants of the Ideal Cement Company at Portland, Colorado, and Devil's Slide, Utah, are the major items in a post-war improvement program of this cement company. It is considered one of the greatest ever undertaken by any cement company, over so short a period. It was conceived, carried out, and completed in approximately 2½ years, increasing the company's annual productive capacity, until now it is said to be the fourth largest manufacturer of Portland cement in the country.

Like 96 percent of the cement plants in the United States, Ideal installed the Fuller-Kinyon Conveying System in both the Portland and Devil's Slide plants. These systems are used for conveying finished cement from pulverizers to the cement storage silos. Illustrated above are two Fuller-Kinyon Pumps, and the Fuller Rotary Single-stage Duplex Compressor, which furnishes air for the conveying system, at the Portland plant. One of the pumps serves as a standby. The pumps deliver the finished cement, through a 1100-ft. transport line, to a 12-silo storage.

This combination of a Fuller-Kinyon Pump, direct-connected to a Fuller Rotary Compressor, is, by far, the most efficient method of conveying . . . air where and when needed, at the proper pressures to do the work required most economically and efficiently.

FULLER COMPANY, CATASAUQUA, PA.

Chicago 3 - 120 So. LaSalle St.
San Francisco 4 - 420 Chancery Bldg.

G-59

FULLER

A name to remember, when you have a conveying problem

CHAMPIONS
On Every Count

Powerful performance, rugged good looks, extra economy, long life . . . you can demand any or all of these and get them in full measure in a GMC "450."

Truck-built for the tough truck transport jobs, these champions of the 2½-ton field pull their loads with brilliantly performing, GMC-built, 270 cubic inch "Army Workhorse" engines . . . they carry their loads on strong, sturdy chassis that have deep, stiff frames and heavy, rugged axles . . . and out front of the loads their "king-sized" cabs offer comfort, convenience and safety that's unsurpassed.

Added to all this are such outstanding qualities as GMC's exclusive bumper-bar grille . . . gross weight ratings of 19,000 to 37,000 pounds . . . equipment options to meet the road and load characteristics of *your* hauling job. Your nearest GMC dealer has complete data.

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

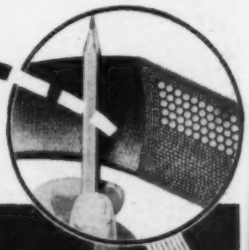
GMC TRUCKS

You can actually *feel* the sides of a belt *change shape* as the belt bends.

In Two Minutes You Can See Exactly How . . .

The Concave Side . . .

(U.S. Patent No. 1813698)



SAVES Your Transmission DOLLARS

Take *any* V-belt in your hands and bend it as it bends in going around a pulley. You will see that the top of the belt, being under *tension*, grows *narrower*. The body, under compression, *widens*. The sides *bulge out*.

This shape change—in a *straight-sided* V-belt—is shown in Figures 1 and 1-A, below.

Straight-Sided V-Belt

How Straight-Sided V-Belt Bulges in Sheave-Groove.

Now look at Figures 2 and 2-A. There you see how the *same shape change* affects the V-belt built with the precisely engineered *Concave Side* (U.S. Patent No. 1813698).

Gates Vulco Rope with Concave Side.

No Side Bulge. Precise Fit in Sheave Groove.

The top of the belt narrows, the body widens. But the sides *merely straighten—and* the new shape *exactly fits* the sheave groove!

Two savings result. (1) Uniform side-wall wear—*longer life!* (2) Full side-wall grip on the pulley carries heavier loads and *sudden load increases* without slipping; saves belts, saves *power!*

The Mark of SPECIALIZED Research

The Concave Side is *MORE IMPORTANT NOW Than Ever Before*

Because the sides of a V-Belt are what actually drive the pulley, it is clear that any increased load on the belt means a heavier load that must be transmitted to the pulley directly through the belt's sidewalls.

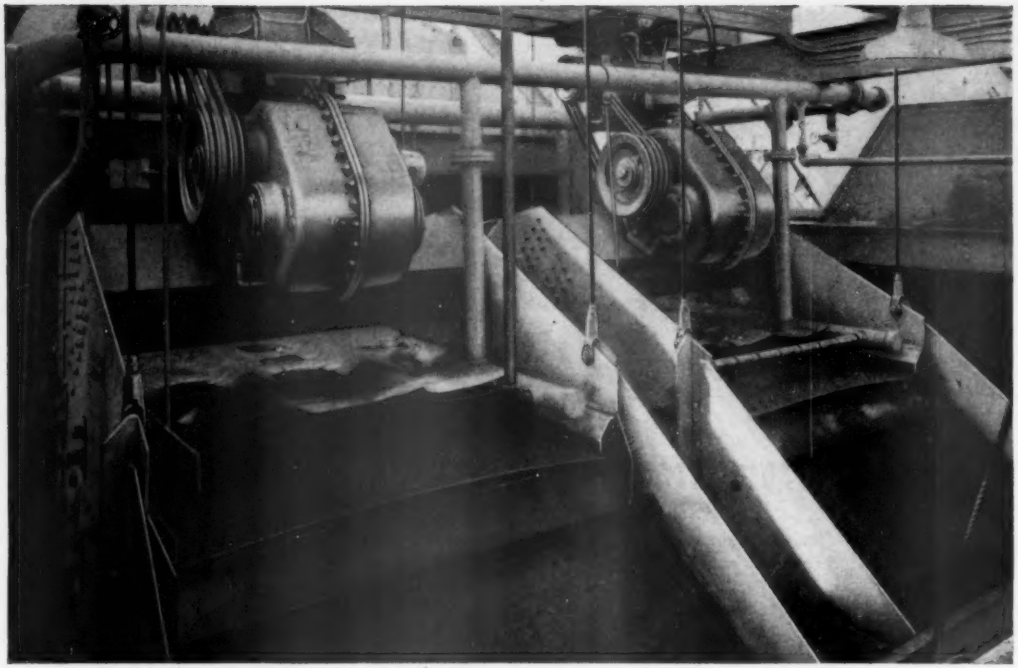
Now that Gates SPECIALIZED Research has made available to you SUPER Vulco Ropes—carrying fully 40% higher horsepower ratings—the life-prolonging Concave Side is naturally more important in conserving belt life today than ever before.

4910

GATES VULCO ROPE DRIVES

Engineering Offices and Rubber Mills IN ALL INDUSTRIAL CENTERS of the U. S. and 71 Foreign Countries

THE GATES RUBBER COMPANY
DENVER, U.S.A.
The World's Largest Makers of V-Belts



Profits from River Bottom Dredgings ...with *Low-Head* Screens

ON ONE OF the largest dredge boats on the Ohio River, these two 5x12 ft double deck *Low-Head* screens help reclaim valuable river bottom aggregates.

Together they handle several hundred tons per hour of sand and shot gravel . . . separate minus ⅛-inch sand and a graded ⅜ to ³⁄₁₆-inch shot gravel.

Little maintenance has been required in 8 years of 10 to 18 hours a day operation . . . only screen decks and clamping bars have had to be replaced.

This is only *one in hundreds* of installations where *Low-Head* vibrating screens have proved profitable investments in the preparation of rock or ore.

CHECK THESE *LOW-HEAD* FEATURES

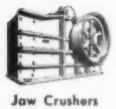
- Vibrating motion at 45° to the horizontal causes rapid stratification and a definite conveying action. Result is maximum screening capacity per sq ft of cloth area.
- Screen surfaces easily removed or tensioned by means of clamping plates located on outside of screen body.
- Straight-line horizontal operation reduces headroom required . . . cuts installation costs.
- Sizes 3x6 to 6x16 ft; 1, 2 or 3 decks.

The Allis-Chalmers representative in your area can tell you how *Low-Head* screens may increase your profits. Call him, or write for **Bulletin 07B6330.** Allis-Chalmers offices or distributors are in principal cities in the U. S. A. and throughout the world. A-2825

Low-Head is an Allis-Chalmers trademark.

ALLIS-CHALMERS, 974A SO. 70 ST.
MILWAUKEE. WIS.

Kilns. Coolers, Dryers



Jaw Crushers

Hoists

Mills

Gyratory Crushers

Vibrating Screens

AND OTHER EQUIPMENT FOR THE CRUSHING, CEMENT AND MINING INDUSTRIES

ALLIS-CHALMERS

LOW COST PER UNIT OF WORK

Suppose you're considering two competitive brands of wire rope. They look alike, but one sells for a little less than the other. Bargain? Often it's anything but a bargain. For purchase price alone isn't the measure of wire-rope economy.

Sometimes you may find a wire rope with a lower price tag than Bethlehem's. But how does the cheaper one compare in total service rendered? How about its *Cost per Unit of Work?*

What a unit of work is depends, of course, upon the industry involved. It can be a ton of rock moved by a power shovel. Or a car of coal hauled up a slope. Or a ton-mile in oil-country rotary drilling. But in any case, unless your final rope Cost per Unit of Work is *low*, the rope has not done an economical job for you. That's why first cost—purchase price—isn't the sole yardstick.

Bethlehem wire rope is a quality product, one conscientiously built for long-range economy. When you buy it, you are spending your money wisely. You are buying wire rope that means, in the truest sense, *low* Cost per Unit of Work.

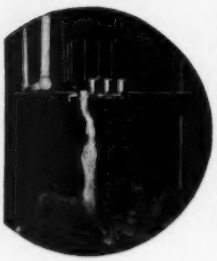
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

Export Distributor: Bethlehem Steel Export Corporation

GET RID OF ALL TRAMP METAL IN YOUR CONVEYORS

(ABOVE) *Root pickers in Michigan quarry remove marked manganese dipper-tooth from conveyor line.*
(BELOW) *The two Eriez Metal Detectors installed here paid for themselves in first month of operation.*



Protect your crushers, calenders, pulverizers and screens from both ferrous and non-ferrous tramp metal with the ERIEZ ELECTRONIC METAL DETECTOR.

Operates effectively at belt speeds up to 900 feet per minute and handles any burden depths. It is easily adjusted for minimum size of tramp metal to be detected.

In this installation the Eriez Detector stops the belt and marks the spot where magnetic or non-magnetic tramp metal is on its way to damage costly machinery and impair production.

Other devices to signal the presence of stray metal can be installed to suit individual applications. Typical of those in use are reject arms, horns, flashing lights, etc.

The search coil is custom built for any size and type of conveying line and is fully automatic in operation. Eriez engineers supervise installation and adjustments. Send for questionnaire, drawings and literature.

Eriez Manufacturing Company
29 East 12th Street, Erie, Pa.

MEMO

No matter what your tramp metal problem may be, there is a Homer permanent magnetic Separator to suit your needs

see Homer first for
PLATE TYPE SEPARATORS - PULLEYS
DRUMS - PNEUMATIC HUMPS
LIQUID TRAPS - PORTABLE UNITS

In HOMER Permanent "non-electric" Magnetic Separators, you get only the "finest" of materials combined with "proven" design.

Homer engineers are thoroughly qualified to analyze your tramp metal problems and to make processing recommendations. Let us help you —write us today.

The HOMER MANUFACTURING CO., Inc.
DEPT. I-52 LIMA, OHIO

Producers of Magnetic Separator Equipment Since 1923

Something NEW in HANGERS and HAMMERS for a Lippmann Mill

Fig. 1

Fig. 2

(Patents Pending)

Fig. 1. New Millerd hammer. Fig. 2. Millerd hanger after a little grinding in a Lippmann hammer. Many Lippmann owners are buying Millerd hangers to use up old Lippmann hammers. We do not recommend weakening Millerd hangers by grinding or cutting.

We recommend Millerd hammers for: 1. Quick changing, no burr. 2. Solid crushing bar. 3. Thick wearing bar. 4. When worn out throw the hole away, not heavy used hammer. 5. Four reversible wearing corners.

GEO. MILLERD CO., New London, Wis.

Condor RUBBER PRODUCTS

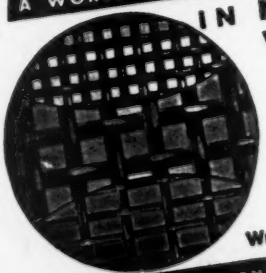
for the Stone, Gravel and Cement Industries

Air Hose • Sand Suction Hose • Transmission Belting
V-Belts • Conveyor Belts

Steam Hose
Water Hose
Suction Hose
Dredge Sleeves
Cement Loading Hose
Elevator Belts
Pulley Lagging
Chute Lining
Launder Lining
Slings
Packing
Abrasive Cutting and Surfacing Wheels

RAYBESTOS-MANHATTAN INC.
MANHATTAN RUBBER DIVISION
EXECUTIVE OFFICES AND FACTORIES PASSAIC, NEW JERSEY

Industry has A WORLD OF CONFIDENCE IN NAT-ALOY WIRE CLOTH



COVERS EVERY REQUIREMENT

. . . for a dependable, long-wearing, non-crystallizing Screen Cloth. Has "Nat-Aloy" Lock Crimp Meshes. Preferred for screening accuracy, economy and serviceability. All Sizes — All Meshes — All Gauges.

Write for Catalog No. 55

NATIONAL WIRE CLOTH CO., INC.
St. Paul, Minn.

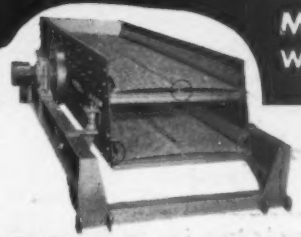
Think of STANDARD when you need ELEVATOR BUCKETS

Standard designs or special buckets to your order. Skilled service in a well-equipped plant specializing in replacement buckets. Welded or riveted construction. Large or small orders given prompt and individual attention. Write for prices giving quantity, length, depth, projection, gauge of steel and type of bucket wanted.

STANDARD METAL MFG. COMPANY
Malinta, Ohio

Continuous Flow . . .

MEANS HIGHER PRODUCTION WITH A DIAMOND ROTOR-LIFT PLANT



DIAMOND BALANCED VIBRATOR.

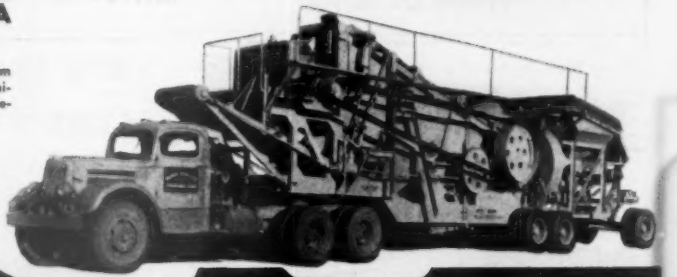
Designed to spread material over entire screen. Special clamps keep screen tight without cutting NOT: ample space between decks!

THERE'S NO CLOGGING A DIAMOND SCREEN!

Fast, thorough separation—with material moving from top deck of screen to lower end continuously—eliminates work stoppage or clogging—means more material through the crushers—consequently more aggregate produced per hour and greater profit per ton!

That's just one outstanding advantage of DIAMOND Rotor Lift design!

SEE YOUR DEALER OR WRITE . . . FOR COMPLETE INFORMATION.



DIAMOND

DIAMOND IRON WORKS, INC.
AND THE MAHR MANUFACTURING COMPANY DIVISION
MINNEAPOLIS 11, MINNESOTA

GREATER YARDAGE! LOWER COST!

WELLMAN *Williams* WELDED BUCKETS

Wellman Buckets cost less to maintain because they are ruggedly built. They deliver bigger payloads because they are properly designed. The superior engineering in Wellman Buckets gives the operator better balance, easier handling, cleaner digging. Wellman pioneered the unique construction that pays off in greater yardage at lower costs. There's a Wellman Bucket for every service.

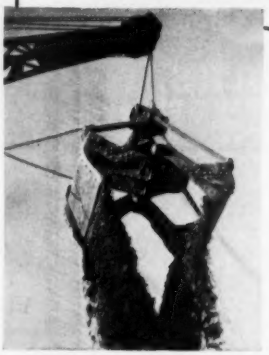
SEND FOR BULLETIN

THE WELLMAN ENGINEERING COMPANY
7014 CENTRAL AVENUE CLEVELAND 4, OHIO

SIDE DUMP
FOR
SPEED
18 Ton Pay Load
Twin Hoist Hydraulic
Make Hauling Easy
LANDIS STEEL CO.
Box 248
Picher, Oklahoma

Landis S-343 Used in Lime Quarry by Anchor Stone and Materials Co., Tulsa, Oklahoma

How to select a clamshell bucket
Pick the type that fits most of your needs



Catalog 2076 contains many practical tips on bucket selection and use. Write for your copy today.

For extra-profit performance, select the bucket built to handle the bulk of your work most efficiently. By adding or removing certain accessories — center counterweights to facilitate bucket opening; scoop counterweights to add digging power; side, corner or bottom teeth of correct style for maximum penetration — your Blaw-Knox bucket will fit practically all your operations. Blaw-Knox engineering service makes possible proper bucket selection for maximum profit.

BLAW-KNOX DIVISION
OF BLAW-KNOX COMPANY
2004 Farmers Bank Bldg.
Pittsburgh 22, Pa.

BLAW-KNOX CLAMSHELL BUCKETS
THE MOST COMPLETE RANGE OF SIZES AND TYPES

GEARS
Philadelphia Gears are made in all types and sizes for every industrial need. Also, racks, ratchets, pawls.

GEARMOTOR
Single, double, and triple reduction h.p. up to 60.

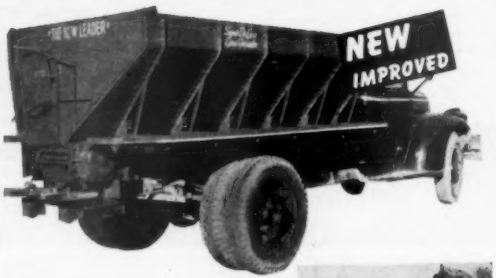
MOTOREDUCER SPEED REDUCERS

Motor and speed reducer in one sturdy housing. Both horizontal and vertical types with ratios up to 450:1. All standard horsepowers. D.C. or A.C. motors.

A complete line of speed reducers of all types in a wide range of ratios and horsepowers for straight line, right angle or vertical drives.

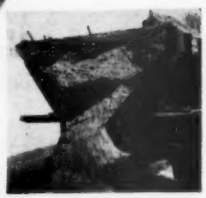
Also "LimiTorque" Automatic Valve Operators.
PHILADELPHIA GEAR WORKS, Inc.
Erie Ave. and G St. Philadelphia 34, Pa.
For over 37 years, manufacturers of Gears and Speed Reducers.

NEW LEADER *Super Deluxe*
LIME AND ROCK SPREADER



The most advanced spreader on the market. Spreads lime, sand, chips, gravel . . . hauls and self-unloads all types of construction materials including crushed rock. Reinforced welded steel frame, wooden hopper, new simplified worm gear drive, direct from truck power take-off. Mounts on any standard truck chassis.

Write for illustrated literature.



New swinging endgate. Distributor discs easily and quickly removed.

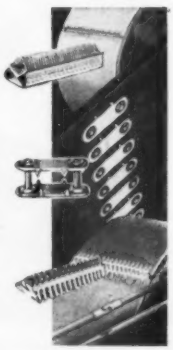
HIGHWAY EQUIPMENT COMPANY, INC.
603 D AVENUE N. W., CEDAR RAPIDS, IOWA
Manufacturers of the World's Most Complete Line of Spreaders

ARMSTRONG-BRAY

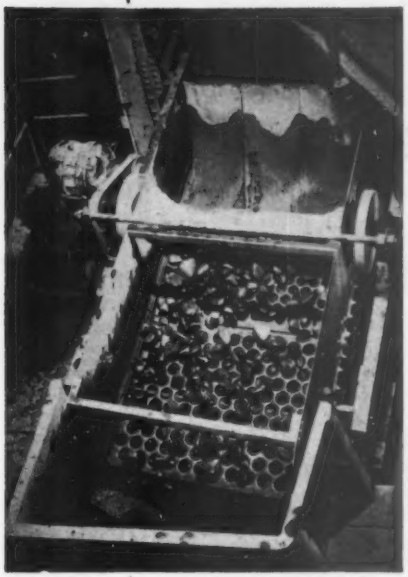
WIREGRIP Belt Hooks come with extra (patented) blue aligning cards—that assure perfect alignment of hooks—less hook loss and a better job when applied. 6 sizes.

PLATEGRIP Fasteners for . . . Conveyor Belts. Made strong dust-tight joints in belts of any width. Spread tension uniformly. Allow natural troughing of belt. Operate smoothly over flat, crowned or take-up pulleys. Sizes for belts from ¼" to 1½" thick. Easily applied.

STEELGRIP Flexible Lacing, applied with a hammer, clinches over and protects end of belt. Makes strong, flexible joints. Boxed with 2-piece hinged rocker pins or in long lengths.



ARMSTRONG-BRAY & CO.
"The Belt Lacing People"
5394 Northwest Highway Chicago, Illinois



The mesh stays uniform however rough the usage

An outstanding advantage of Hendrick Perforated Plate for vibrating and shaking screens is that it maintains uniformity of mesh throughout an unusually long service life.

Other advantages are its full clearance that obviates clogging, and the ease with which decks can be changed, minimizing labor costs. For screening highly abrasive material Hendrick Perforated Plate is heat-treated to increase its toughness.

With any desired shape and size of perforations, Hendrick Perforated Plate can be supplied—either flat or corrugated—in any required gauge in tank, high carbon, high tensile, and abrasive-resisting steels, and in other commercially rolled metals. Write for copy of new Perforated Plate Catalogue.

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Manufacturing Company

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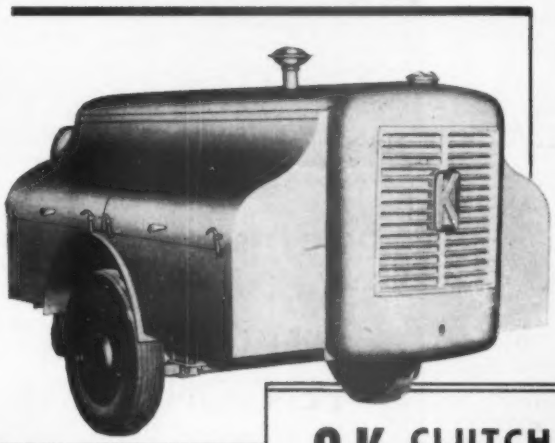
Sales Offices In Principal Cities

Perforated Metals
Perforated Metal Screens
Architectural Grilles
Mitco Open Steel Flooring,
"Shur-Site" Treads and
Armorgrids

O.K. COMPRESSOR proves superior



Actual performance counts — and here is what a user says about the O.K. compressor after years of service.

"The compressor used by us has been more than satisfactory . . . it has worn out two newer models under much less difficult operation. We are using your compressor in connection with a large scrubber tank and a large storage tank as much as ½ mile away and are never bothered with condensation or other usual air trouble." So says Mr. Walter Bauer of Memorial Park in Tulsa, Oklahoma.

Available in single or two stage—gasoline or diesel—60, 85, 105, 160, or 210 cu. ft. actual free air—with mounting as desired.

Write for free bulletin or name of nearest dealer.

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WIRE ROPE

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"HERCULES" (RED STRAND) the DEPENDABLE WIRE ROPE for any TOUGH JOB

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No holes in shell; front and back side plates held WITHOUT bolts.
Side plates easy to remove.
Tapered shaft can be removed from impeller by turning backwards.
Front and back heaviest type ball bearings.
"V" belt drive
6 Inch
8 Inch
10 Inch
Lightning
Powerful, one-piece bearing housing.

Wearing parts of Lightning pumps are made of HI-CHRO-HI, a white semi-steel that really stands up and takes a beating. Lightning bearings and shaft are oversize to prevent breakdown. All Lightning parts can be removed without special tools and replaced by standard factory parts.

Write today for complete information.

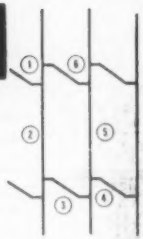
The *Lightning*

SAND & GRAVEL PUMPS

KANSAS CITY HAY PRESS CO.

801 Woodswether Road Kansas City, Mo.

7 STAVES INTERLOCK



Each Super-Concrete Stave in a Neff & Fry Silo interlocks with six contiguous ones. The edges are grooved and beaded. The joints are so secure that grouting is not necessary, although a mastic filler is used when damp-proofing is specified.

Due to the diagonal joints, reinforcing rods impinge upon both ends of all staves. As many additional rods are drawn around the bodies of the staves as needed to resist lateral pressure.

This patented design makes the N & F Silo a structure of distinctive strength and solidity. The corrosion-resistant materials assure long life with virtually no maintenance cost.

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NEFF & FRY

SUPER-CONCRETE STAVE

STORAGE BINS

FOR ALL SORTS OF FLOWABLE BULK MATERIALS

DEPENDABLE

FOR 50 YEARS

Woven Wire

ALLOY SCREENS

TWIN CITY IRON & WIRE CO.

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Proper Preparation and Planning will

REDUCE YOUR PENSION COSTS

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WET or DRY

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Screening machinery, engineered by pioneers and accepted by industry throughout the world for the past 25 years, is available for various applications, in any type or size, single, double or triple-deck models, open type or dust-housed complete with hoppers and chutes fabricated to specifications.

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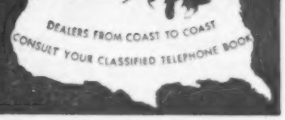

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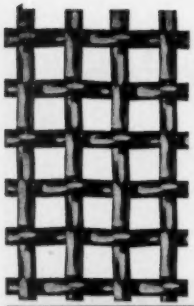

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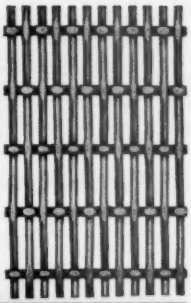
For Accuracy, Capacity and Durability

TYLER SCREEN SECTIONS FOR ALL MAKES OF SCREENING MACHINES



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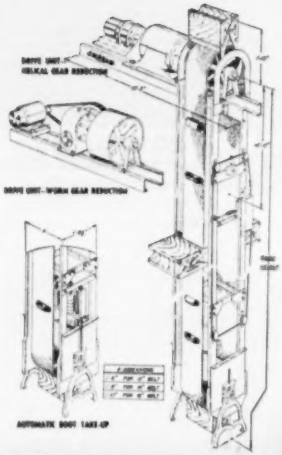

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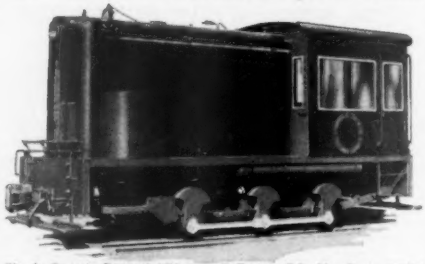

Cia de Cemento Portland "Diamante," Bogota, Colombia, S. A. employ this 25-Ton, 0-6-0 Davenport Diesel Mechanical Locomotive, equipped with Caterpillar D-17,000 Engine.

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Piping, hoods, elbows and fittings to No. 7 gauge furnished to specifications.

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PERFORATED METAL SCREENS

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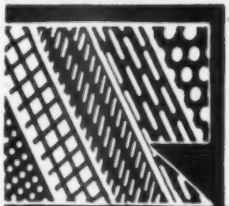

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Sleeve Bearing, open—except as noted

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75	G.E.	IK	2200	720
75	Triumph	TR-16	2300	514
60	G.E. BB	K-4448	220/440	1800
60	G.E. BB	K-504U	220/440	1200
60	G.E. Ex. Pf.	KC-505	220/440	1200
60	Al. Ch. BB	AR-826F	220/440	514
50	Al. Ch. BB	AR-445	220/440	1800
50	G.E.	KT-327	440	1800
50	Westg.	CS-587-C	220	1800
50	U. S. Vert.	SCV-937	220/440	1800
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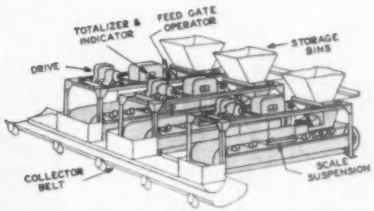

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Automatically transport, weigh, indicate, integrate, totalize tonnage and maintain a pre-set rate of feed for blending raw materials.

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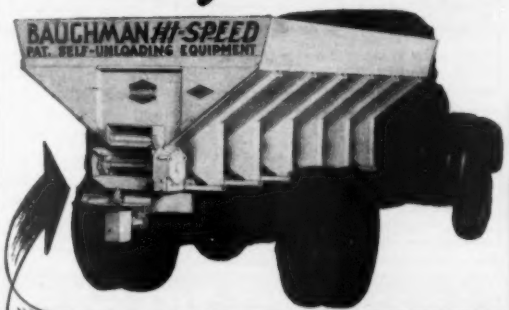
new...

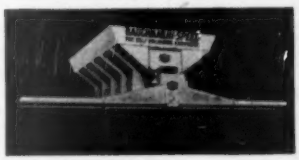
BAUGHMAN announces the latest design in *Customized Spreaders



the BOTTOM DUMP

Again BAUGHMAN leads! The versatile BAUGHMAN Self-Unloading body now is available with the bottom dump. Dumps road rock and other aggregates instantly through 4" opening along entire length of body bottom. Meets all highway requirements. Positive eccentric lever lock . . . will not leak when closed.

*CUSTOMIZED—built for specialized money-making jobs. Spreads lime and phosphate . . . delivers coal and grain into bins . . . transfers loads. RUGGEDLY BUILT of high tensile alloy steel for more strength with less weight . . . more rust resistance. Service-built for commercial operator profits.



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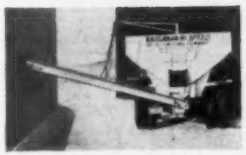

SWIVEL CONVEYOR ATTACHMENT delivers anywhere in a half-circle. Eliminates truck maneuvering . . . ideal for close quarters. One-man operation—controls at rear of body.

MARL SPREADER also spreads mud, paper mill sludge, sewage, etc. Special model with beater and 2 distributors turning in opposite directions — not designed for use with dry lime, phosphate, other dry materials.

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CONTRACTORS
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ENGINEER, preferably graduate mechanical with 10 years in Gypsum industry with executive experiences. In answering state salaries received and expected, as well as experiences.
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All Sizes
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N1 & N2 Cement Gun.
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NORTHWEST No. 3 ¾ cu. yd. shovel. Overhauled $3000.00
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UNIVERSAL portable 20" x 36" twp unit crushing and screening plant. Complete. Used 16,000 yds. Would take yardage contract, purchase privilege.
TD-9 with Hough one yard front end loader. Overhauled $2750.00
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2—Whitcomb gas, 6 ton, 24" ga.
Plymouth—8 ton Std. Ga.—#4185.
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2—Chi. Pneumatic, 1200', 3/60/220.
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1—I.R. 500' Diesel-Portable.
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1—American S.L., 100 ton, @ 120'—100' boom.
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1—American 70 ton @ 120'—135' boom—complete with American 3 Drum—250 H.P. Gas Hoist.
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1—Industrial Type L, 50 ton, new 1948.
1—Browning #8, 20 ton, Oil Fired.
N. W. No. 6—1½ yd. Shovel—Drag—Diesel. #4141.
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2—A.C. Mod. 42—Dual Drive Gas Graders—Good condition—Cheap.
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Gardner-Denver air-cooled 105 foot with receiver, V-Belt driven from power take-off and mounted on 1942 Ford chassis with Wood two-yard dump body.

Gardner-Denver two-stage 180 ft., skid mounted.

Worthington 210 cubic foot, two-stage air-cooled, on skid base with Hercules diesel.

Chicago Pneumatic 210 cubic foot, two-stage, air-cooled, Caterpillar diesel on four rubber tired wheels.

Gardner-Denver 315 cu. ft. two-stage, skid mounted, Murphy four-cylinder diesel.

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New 18" — 24" — 30" — 36"

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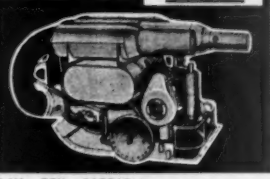

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Complete with Motors, Fans & Pipe

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Pulleys, belt idlers, belt, drives
Belt trippers for 20" and 24" belt
Single strand flight Coal conveyor, 15" x 150'
Apron feeders, 18", 24" and 30"
New Standard Wood Apron Conveyor, 48" x 105'
Portable flat belt conveyor, 5 HP motor, 18" x 24'
Slat conveyor 30" x 50'
Portable flat belt conveyors, 3 HP motor, 10" x 10'
Jeffrey #3 and 4 electric vibrating feeders
Screw conveyors

BUCKET ELEVATORS

10 complete open and closed elevators
Inclined and vertical 14" bucket elevators
Inclined and vertical 12" bucket elevators
New 16" enclosed elevators
Enclosed spaced bucket elevators 10"
Elevator belt, chains, buckets, sprockets, etc.
400' new #933 thimble chain with K2—½ links
CHAINS: H78, 83-F2, 114, 522, 730, Standard roller chain

CRUSHERS AND PULVERIZER

Jeffrey 30" x 24" rigid hammer pulverizer
American Pulverizer, type 8F-T
Farrell crusher Bladtype, 10" x 16"-A
Allis-Chalmers 3D gyratory crusher
Farrell 1-C laboratory crusher
Sturtevant 2-2 Sample Grinder
Gruendler Aristocrat Peerless Grinder, 16-40
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Double Roll Crusher 18" x 28", heavy duty

MISCELLANEOUS

Gear reducers from ½ to 90 HP
Gearmotors and Vari drives
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Electric hoists up to three drums
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New ¾" wire rope 40' slings

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Seco vibrating screen, 3' x 8', two deck
Selectro vibrating screen, 3' x 8' two deck
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Niagara double deck, 15" x 36"
Four Hummer enclosed 3' x 5' single deck
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15 Ton Truck Scales.....$450.00
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10 to 20 tons per hour capacity.....$395.00
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Troughing idler conveyors — picking tables. Lengths from 10' to 500', widths to 60".
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TROUGHING AND PICKING TABLE IDLERS

All steel. Interchangeable with other well-known makes of idlers. Precision ball bearings with alemite fittings. Replaceable bearings. Shafts run clear through, and no bearing adustments are required. Easy to start and will run in cold weather. Rust-proof ball races; maintenance is negligible. Build your own conveyors: we have all parts, including standard sections, head and tail pulleys, take-ups, drives, idlers, speed reducers, sheaves, belting etc.

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14" belt	$18.50	24" belt	$21.00
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42" belt	$24.00		

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24" belt	$8.25	36" belt	$ 9.75
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Used Vibrating Screen, Double Deck, Diamond, 3' x 10' (good condition).....$750.00

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50 Ton 2 Comp. Material Bin
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50-100-150-175 HP Slip Rg. Motors
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Width	Ply	Top-Bottom Covers
48"	8	1/8" — 1/16"
42"	5	1/8" — 1/16"
36"	6	1/8" — 1/16"
30"	6	1/8" — 1/16"
30"	5	1/8" — 1/16"
26"	5	1/8" — 1/32"
24"	5	1/8" — 1/32"
24"	4	1/8" — 1/32"
20"	5	1/8" — 1/32"
20"	4	1/8" — 1/32"
18"	4	1/8" — 1/32"
16"	4	1/8" — 1/32"
14"	4	1/16" — 1/32"
12"	4	1/16" — 1/32"

Inquire For Prices — Mention Size and Lengths

TRANSMISSION BELTING

HEAVY-DUTY FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18"	6	10"	6	6"	5
16"	6	10"	5	5"	5
14"	6	8"	6	4"	5
12"	6	8"	5	4"	4
12"	5	6"	6	3"	4

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"A" Width All Sizes —
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FIRE HOSE
APPROVED SPECIFICATION HOSE EACH LENGTH WITH COUPLINGS ATTACHED

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2"	50 "	23.00
	25 "	13.00
1½"	50 "	20.00
	25 "	11.00

Specify Thread On Couplings

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I.D. Size	Length	per Length	Universal Couplings
½"	25 feet	$5.00	$1.50 Pair
	50 "	10.00	1.50 Pair
¾"	25 "	7.50	1.50 Pair
	50 "	15.00	1.50 Pair
1"	25 "	10.00	1.50 Pair
	50 "	20.00	1.50 Pair

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I.D. Size	Length	per Length
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	50 "	8.00
1"	25 "	6.25
	50 "	12.50
1½"	25 "	7.50
	35 "	$10.50
	40 "	12.00
	50 "	15.00
1½"	25 "	10.00
	35 "	14.00
	50 "	20.00

Each Length with Couplings Attached

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ALSO GOOD USED 36 in. belt, 175 ft.

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ELECTRIC: 676, 807, 1302, 1723, 2850 & 3176 Ft.
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5—25 & 40 Ton 120 Ft. Boom Whirleys.
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80—Std. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.

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5′ x 22″, 6′ x 48″ & 7′ x 108″ Hardinge Conical Ball Mills.
3 x 3, 4 x 10, 6 x 6 & 7 x 5 Cylindrical Ball Mills.
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5 x 22 ALLIS CHALMERS Tube Mill.
4 x 16 & 5½ x 30 Tube Mills. Steel & Silex Lined

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8′ x 14 Hardinge Counter Current.
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Single Shaft Type—9x16, 10x16, 11x18, 8x36, 10x30, 15x24, 15x30, 10x36, 15x36, 19x36, 20x36, 24x36, 10x40, 30x42
Cam & Roller Type—8x10, 6x20, 10x16, 10x20, 10x26, 11x18, 12x16, 12x22, 12x24, 13x26, 11x24, 11x26, 13x24, 14x26, 14x28, 15x36, 16x32, 9x40, 24x40, 32x50

REDUCTION TYPE CONE CRUSHERS

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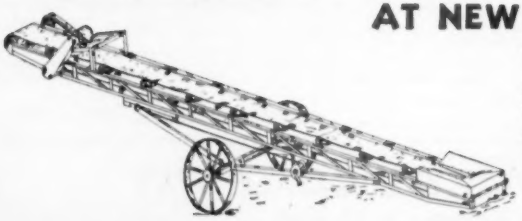

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Here's the *MULTICLONE* Story in a Nutshell . . .

IT SAVES SPACE

and we mean really important space savings. The chart here tells only part of the story because, in addition to being far more compact both in square and cubic footage, the *shape* of the MULTICLONE can be adjusted to fit various space requirements—long and narrow, short and wide, or square. You can often fit the MULTICLONE into tight spaces or waste areas too small for other equipment!

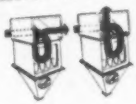
Make	Relative Space Requirements In Sq. Ft.	In Cu. Ft.
Multiclone	1.0	1.0
Collector A	2.1	1.8
Collector B	5.9	3.2
Collector C	6.8	3.9

IT RECOVERS THE "FINES"

as well as the coarser particles. Its patented *vane* design and small diameter tubes generate higher centrifugal forces, thus recovering a large percentage of the very fine particles 10 microns and less in addition to the heavier particles. MULTICLONE's high recovery of *both* small and large particles means high overall efficiency on *any* application!

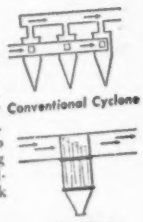
IT IS UNUSUALLY ADAPTABLE

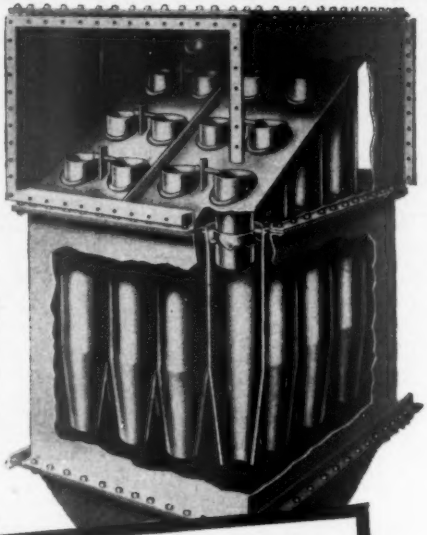
for, in addition to the *shape* adaptability outlined above, inlet-outlet connections are also easily adaptable. For low headroom, install the MULTICLONE with side-inlet, side-outlet. Or for tight side clearances, use side-inlet, top-outlet connections. Still other arrangements are possible for special conditions!



IT IS SIMPLE

both to install and to maintain. For example, the MULTICLONE requires only single inlet and outlet ducts compared with the complicated *multiple* ducts of conventional cyclones. Not only saves space—but is simpler and cheaper to install and insulate. Moreover, the MULTICLONE has no filters to clog, no high-speed moving parts to maintain . . . and a single collecting hopper serves an entire bank of tubes!





On any dust recovery job — large or small — the MULTICLONE has many advantages!

WHY LIMIT your dust recovery job to one or two performance features when the Multiclone combines so many important advantages in the one unit? Check over some of the Multiclone's multiple savings outlined at the left. Note how — on every important feature — the Multiclone is the answer. These and other Multiclone advantages are the result of experience gained through more than 38 years of specialization in the science of dust recovery, beginning with the first commercial application of the well-known Cottrell Electrical Precipitator. Take advantage of these years of specialized study by installing Multiclone.

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GET ALL THE FACTS. Send for this booklet that describes the many MULTICLONE advantages. Also let our trained engineering staff study your particular problem and show how MULTICLONE's multiple savings will benefit you. No obligation, of course.

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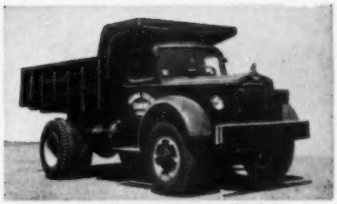
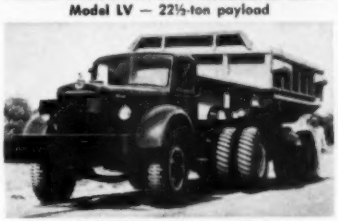
We'll be glad to send you detailed information on these profit-building features, together with complete specifications on any or all of the Mack models shown here. Write for copies of our catalogs.



Model LJX — 10-ton payload

Model LMSW-M — 15-ton payload

Model LV — 22½-ton payload



Model LMX — 20-ton payload

Model LRSW — 30-ton payload

IT'S PART OF THE LANGUAGE:

Built Like a **Mack** *Truck*

Model LRSW tractor — 50-ton payload

Model LR — 32-ton, bottom-dump coal hauler

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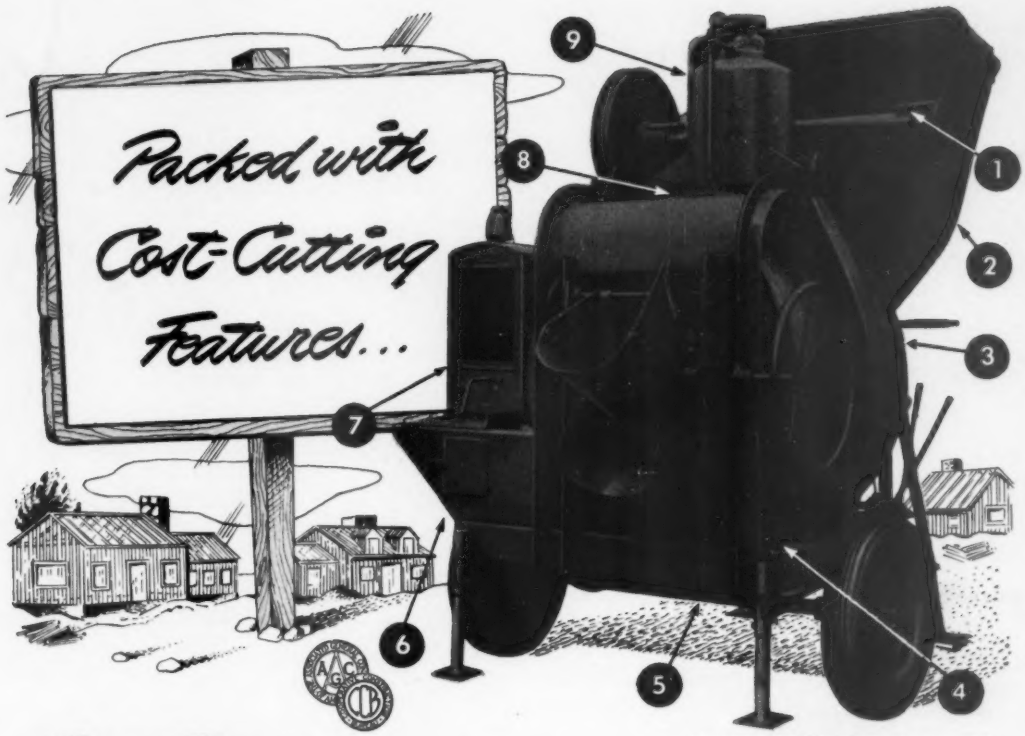

BLUE BRUTE design shows you what to look for in a portable mixer

Give a Worthington-Ransome Blue Brute 11-S or 16-S Portable Mixer a thorough going over — and get a real revelation of how far mixer-design has advanced! For example: ❶ *skip cable* winding shaft, mounted on self-aligning bearings, has grooved spools for longer cable life; ❷ *power loader* with automatic knock-out and brake set when skip raises to charging position; ❸ *skip vibrator*, simple and effective, assures quick transfer of materials from skip to drum; ❹ *drum rollers* of genuine car wheel metal with chilled treads — each roller mounted on two Timken bearings; ❺ *roller sub-frame* under drum prevents concrete accumulation on roller shaft or bearings; ❻ *countershaft* of heat-treated alloy steel in self-aligning ball bearings — all units easily accessible; ❼ *engine* mounted with radiator facing mixer's discharge side avoids dust, clogging and overheating; ❽ *drum drive gear* of one-piece semi-steel casting, machined to true circle; ❾ *water tanks* of accurate, exclusive spiral cut-off type — no rubber to deteriorate.

These and many other features — including Ransome's perfected mixing action, famous for producing better quality concrete — are the reasons why construction men everywhere depend on Blue Brute Portable Mixers for more concrete at less cost. See your nearby Worthington-Ransome distributor for performance facts that prove *there's more worth in a Blue Brute.* RS-5

A Blue Brute 16-S Portable Mixer speeds operations on a big housing project in Springfield Gardens, Long Island, N. Y. This machine is one of a fleet of both 16-S and 11-S Blue Brutes owned by Angelo Aragona, who says: "I am well pleased with their performance and economy."

Worthington Pump and Machinery Corporation, Worthington Construction Equipment Dept., Harrison, N. J.
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